4014

US Heavy Cruisers in action

Part 1

Don Greer

Warships Number 14

squadron/signal publications

US Heavy Cruisers in action Part 1

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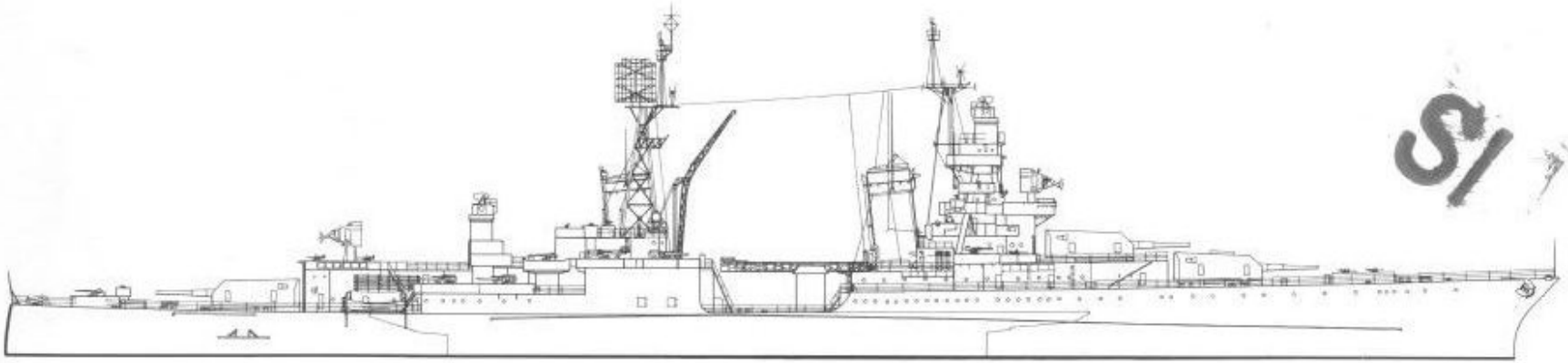

Warships Number 14

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The USS SAN FRANCISCO (CA-38) fires on Japanese warships during the Third Battle of Savo Island, off Guadalcanal in the Solomon Islands, on 13 November 1942. The NEW ORLEANS class heavy cruiser took hits from 14-inch (35.6 cm) shells, yet continued to fight. The SAN FRANCISCO earned 17 Battle Stars and a Presidential Unit Citation for her service during World War II, making her the most honored cruiser in US Navy history.

Acknowledgements

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Dedication:

To my old buddy, dear friend, and school chum William Robert Bailey, may you rest in peace and spend eternity on the water that you loved.

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(Right) The heavy cruiser USS NEW ORLEANS (CA-32) steams from the Puget Sound Naval Shipyard in Bremerton, Washington to Pearl Harbor, Hawaii in July of 1943. She is returning to action after having been fitted with a new bow section. The cruiser lost 120 feet (36.6 m) of her bow in the Battle of Tassafaronga on 30 November/1 December 1942. The NEW ORLEANS is camouflaged in Measure 21, the Navy Blue (FS35044) System. Her Number One 8-inch (20.3 cm) gun turret is trained to port, while the Number Two turret's weapons are aimed at the port aft quarter. (Elsilrac)

Introduction

When the Japanese attacked Hawaii on 7 December 1941, almost the entire US Pacific Battle Fleet was at anchor in Pearl Harbor. The aerial attack denied the US Navy of their most powerful asset – the battleships. The heavy cruisers were called upon to take their place.

The design of the cruiser was conceived during the early days of the exploration of the Americas, when a need arose to protect the heavily laden commercial ships plying the world's oceans. Cruisers were expected to protect their charges and defend themselves. During the American War Between the States (Civil War) of 1861-65, the US Federal Navy was the first to design and build ships that would be classified as cruisers. The resulting **WAMPANOAG class** cruisers were ineffective as fighting ships and were soon withdrawn from service. These vessels were built with a wooden hull and were equipped with a full set of sails, coal fired boilers, and one screw (propeller).

The early cruisers were equipped with both sail and boilers for power. The early boiler/engine combinations were not reliable and the coal fuel took up much space. The sails required additional crew to handle the canvas and ropes. The additional spaces for the fuel and crew caused the early cruisers to grow in length and beam. The WAMPANOAG class cruisers of 1868 were 335 feet (102.1 M) long and displaced 4100 tons (3719.5 MT). The later armored cruiser **PENNSYLVANIA** (later **PITTSBURGH**) **class** of 1899 grew to 503 feet (153.3 M) in length and over 15,000 tons (13,608 MT) full load displacement.

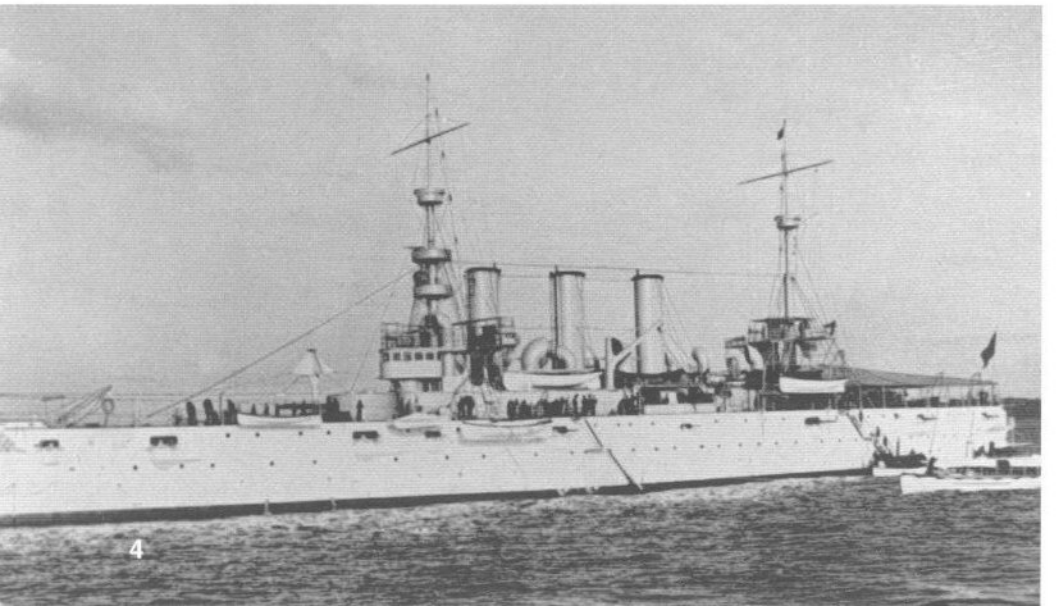
Early cruisers were constructed of wood, with steel banding to hold the hull in shape. The increasing size of cruisers – due to additional guns, boilers, and sails – made naval designers realize that wooden hulls had reached their limits. Larger and heavier hulls would have to be built with iron or steel. The first all-steel cruisers for the US Navy were the **ATLANTA** and **BOSTON classes**, which were authorized in 1883. They were constructed of the finest steels available, as evidenced by the fact that the BOSTON served until the end of World War II. Once ships began being built of steel, armor plating began appearing over sensitive areas such as gun-houses, turrets, engine spaces, hull sides, and decks. This plating protected the crews of these ships during the war with Spain.

The Spanish-American War of 1898 saw the first use of American cruisers in battle. The war began when the US battleship **MAINE** (BB-2) was sunk in Havana harbor, Cuba on 15 February 1898. Whether a boiler exploded accidentally or a mine set by the Spanish caused the MAINE to sink made no difference; the Spanish were blamed and America declared war on 21 April. Commodore George Dewey with his flag in the **OLYMPIA** (C-6) quickly dispatched the Spanish Armada at Manila in the Philippines. Commodore W.S. Schley with his flag in the **BROOKLYN** (CA-3) did likewise at Santiago de Cuba. Combined, Dewey and Schley sustained only eight fatal casualties during their naval engagements with the Spanish. The Spanish lost both ships and land as a result of the six-month long war.

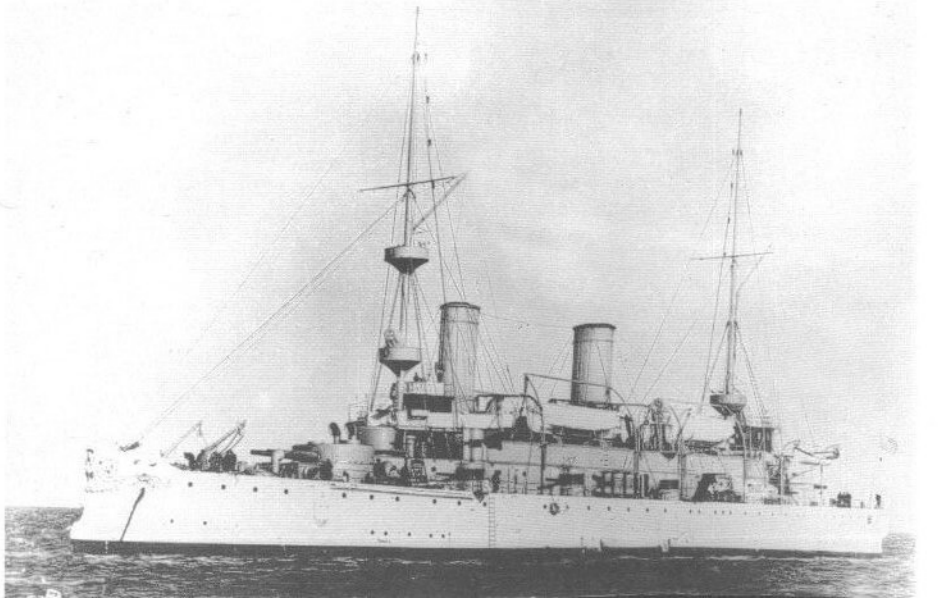
There were two types of cruisers built for the US Navy during the late 19th Century: armored and protected. The armored cruisers had armor on their decks and hull sides, while the protected cruisers only had an armored deck. The ATLANTA and BOSTON classes were the US Navy's first protected cruisers and had 1.5-inch (3.8 CM) thick armored decks. The armored cruisers were generally larger and better armed than the smaller protected cruisers. Cruisers continued to grow in terms of length and tonnage due to their increased amounts of armor and weapons until a treaty was signed to limit tonnage and armament.

The United States did not complete any cruisers during the First World War; however, the US authorized large battle cruisers and smaller scout cruisers in 1916. The battle cruiser was

The ROCHESTER (ACR-2, CA-2) was launched on 2 December 1891 and was originally named the NEW YORK. When the US Navy began naming battleships for US States, this ship was first renamed the SARATOGA in 1911, then the ROCHESTER in 1917. The ROCHESTER's main armament consisted of six 8-inch/35 caliber guns. Her secondary armament was 12 4-inch/40s, eight six-pounders, and four one-pounder guns. She was also armed with three 14-inch (35.6 CM) weapons above the waterline torpedo tubes. The ROCHESTER was scuttled in the Philippines in December of 1941, to prevent her from falling into Japanese hands. (Real War Photos)



The OLYMPIA (C-6) was launched on 11 May 1892 and became the Flagship of Commodore George Dewey's Asiatic Fleet in the Pacific. She was armed with four 8-inch/35 main guns and ten 5-inch/40 secondary weapons. The OLYMPIA was reclassified IX-40 in 1931 and served as a training ship during the Second World War. In 1957, she became a permanent memorial at Philadelphia, Pennsylvania and can be viewed there today. (Real War Photos)



the **LEXINGTON class** and the scout cruisers would become the **OMAHA class** of light cruisers (CL). All of the world's great naval powers soon realized that warships were becoming too large and powerful, as well as costly, to produce. A Naval Conference was called in Washington, DC in 1921 to address the arms race. Great Britain, France, Italy, Japan, China, the Netherlands, Portugal, Belgium, and the United States attended this conference. The conferees signed a treaty limiting both tonnage and armament. Additionally, the construction of naval bases in the Pacific Ocean was curtailed. The results of the Washington Naval Conference required the US to convert two LEXINGTON class battle cruisers, then on the builder's ways, into aircraft carriers of unprecedented size and speed.

In 1930, another Naval Conference was held in London, again to address increasing armament and displacement. The London Conference created the concept of heavy and light cruisers. Heavy cruisers were limited to 10,000 tons (9072 MT) displacement and an eight inch (20.3 CM) main armament. The light cruisers could also displace 10,000 tons, but were limited to six inch (15.2 CM) guns. The cruisers were labeled as 'A' (heavy) and 'B' (light) cruisers. Thus, when the early cruisers were being reclassified from the old 'armored' and 'protected' designators, the armored or heavy cruisers were classified as 'C' for cruiser and 'A' for heavy.

Between the 20th Century's two great wars, the world's naval forces built up at an alarming rate with Britain, Japan, and the United States leading the world in naval forces. Both Germany and Japan violated the terms of the Washington and London Naval Treaties with the launching of their new battleships: the German BISMARCK and the Japanese YAMATO. These battleships exceeded the treaty limits on both tonnage and gun size.

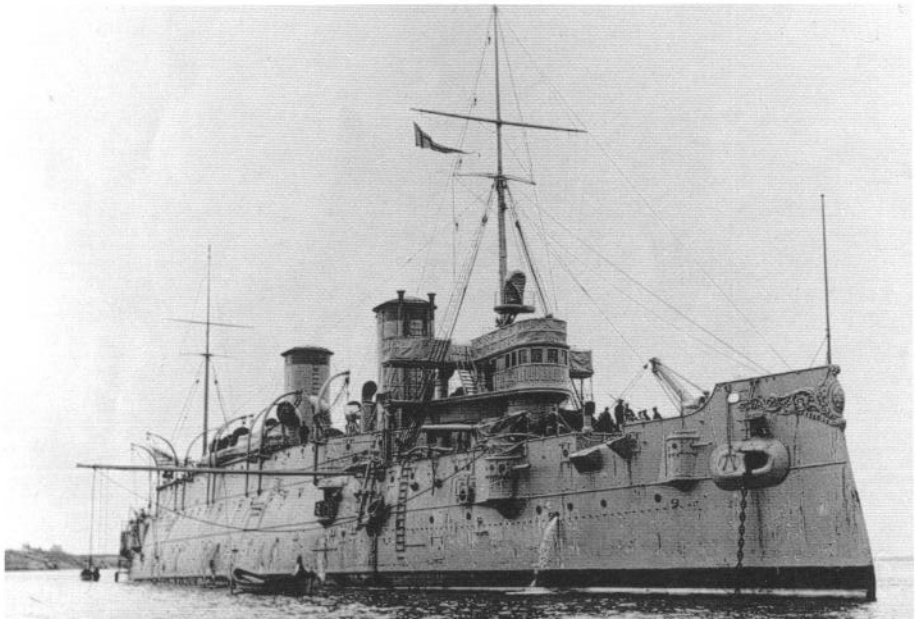
The Second World War for the United States began on the fateful morning of 7 December 1941, when the Naval Air Forces of Japan attacked the US Naval installation at Pearl Harbor, Hawaii and other surrounding air and naval facilities. This attack was launched from six aircraft carriers that had sailed from Japan with the intent of destroying the aircraft carriers and battleships of the US Navy while they were anchored at Pearl Harbor. The attack succeeded in destroying or damaging most of the battleships, but the carriers were not in the harbor and escaped damage. With the loss of the battleships, the heavy cruisers were called upon to 'fill their shoes.'

An indication of the importance of battleships as compared to heavy cruisers is in the fact that of the seventeen US heavy cruisers built and launched between 1929 and 1937, six were lost to enemy action during the Second World War in the Pacific – most to Japanese torpedoes. The US heavy cruisers were forced to assume the role of the more heavily armed and armored battleships that had been lost at Pearl Harbor. The heavy cruisers had been built in compliance with the previous Naval Treaties, which limited them to 10,000 tons. Most of these ships actually came in well under the limit since the designers were concerned with going over the limit and thus violating the treaties. The **PENSACOLA** (CA-24) and **SALT LAKE CITY** (CA-25) came in at 9100 tons (8255.5 MT), with most of the shortfall in armor plate. It is ironic that neither ship suffered the losses experienced by the later **NORTHAMPTON**, **PORTLAND**, and **NEW ORLEANS classes**, although they were often in harm's way. The two PENSACOLA class ships earned 24 Battle Stars between them.

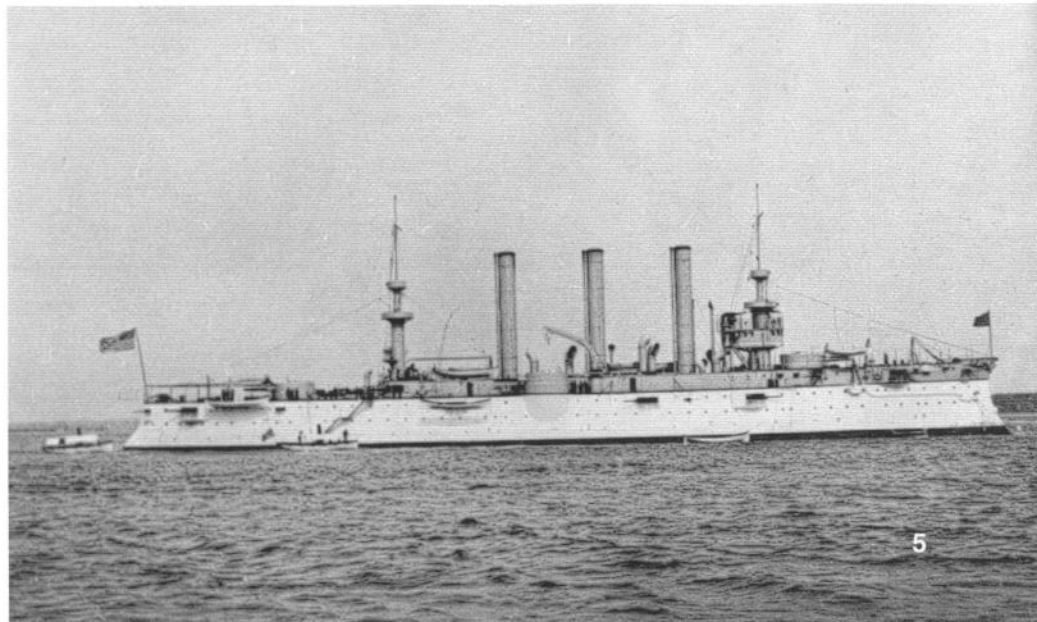
US heavy cruisers were named to honor cities in the United States and later on – in the **ALASKA class** – to honor US possessions. Unlike US destroyers and battleships, both heavy and light cruisers were numbered as they were ordered, without any regard to whether they were light or heavy. The hull numbers, when they began appearing in 1939, were placed on the hull at the bow area and usually painted in white or light gray. The ship's name appeared on the stern, usually in black.

During the 1930s, heavy cruisers were painted in a light gray scheme that eventually became

The MINNEAPOLIS (CA-17) and her sister COLUMBIA (CA-16) were designed as commerce raiders and were thus designed with reduced armament. Launched from Cramp and Sons, Philadelphia on 12 August 1893, the MINNEAPOLIS was armed with one 8-inch/40 caliber shielded gun on the quarterdeck and a pair of 6-inch/40 guns on the forecastle. She was also armed with eight 4-inch/40 and 12 six-pounder guns. The MINNEAPOLIS was coal fired like earlier cruisers, relying solely on steam for her propulsion. (Real War Photos)



The armored cruiser BROOKLYN (ACR-3, CA-3) was launched from Cramp and Sons on 2 October 1895. During the Spanish-American War, she served as Flagship for Commodore W.S. Schley's Fleet at the Battle of Santiago, Cuba on 3 July 1898. The BROOKLYN was armed with eight 8-inch/35 main guns with 12 5-inch/40s for her secondary armament. (Real War Photos)



known as Measure 3. When the war clouds overcame Europe, the US began thinking of camouflage schemes for their ships and by 1943 over 33 schemes had been devised with hundreds of variations, some within a distinct paint Measure. Artistic license and the need to get the paint scheme applied to the ship determined how close to the paint guidelines the design was followed. The most common schemes applied to the heavy cruisers during the Pacific War were Measure 21, the Navy Blue System; Measure 22, the Graded System that consisted of a Navy Blue and Gray paint scheme; and Measure 12, with splotches and various designs. Measure 33 followed along the lines of Measures 31 and 32, in that the schemes were designed to confuse a surface observer by making the ship appear either closer or far away, depending on the angle of the viewer. Measure 17, a scheme that relied heavily on British Admiralty designs, was applied to the AUGUSTA (CA-31) and the escort carrier SANTEE (CVE-29). This design, which was the same on both sides of the ship, was applied especially for the invasion of French North Africa in November of 1942.

All of the US heavy cruisers were armed with the 8-inch/55 caliber* naval guns in various Marks. These weapons were placed in gunhouses in the early ships and turrets in the later cruisers. In a gunhouse, the guns are trained together; a turret allows the guns to be aimed independently of one another. The PENSACOLA class was armed with ten 8-inch guns in four gunhouses in an unusual triple over twin mountings fore and aft. The later NORTHAMPTON, PORTLAND, and NEW ORLEANS classes were armed with nine 8-inch guns in three triple mounts. Secondary armament consisted of eight 5-inch(12.7 CM)/25 caliber guns for anti-aircraft use or close-in shore bombardment. When the US entered the war in 1941, additional anti-aircraft armament was installed. The first such weapon was the .50 caliber (12.7MM) Browning M2 machine gun, which was fitted around the bridge area. This weapon was found to be inadequate and a quad mounted 1.1-inch (28MM) machine cannon, called the 'Chicago Piano,' was installed along with the 20MM Oerlikon cannon when they became available. The 1.1-inch weapon was prone to jamming and required excessive maintenance. The 'Chicago Piano' was replaced by the 40MM Bofors cannon in both twin and quad mounts when this became available. Both the PENSACOLA and NORTHAMPTON classes were armed with six 21-inch (53.3 CM) torpedo tubes in two triple launchers mounted in the upper hull sides in the after superstructure. These tubes were removed and beached until they were placed on US destroyer escorts (DEs) in 1942.

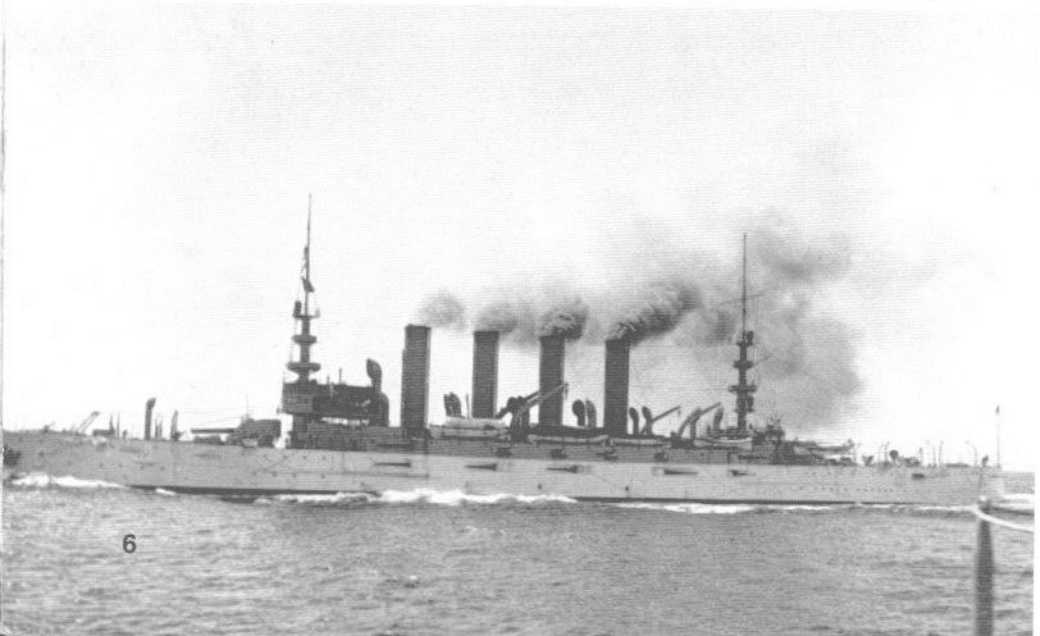
*The caliber of a naval gun is the barrel's length divided by the bore diameter. For example, the 8-inch/55 caliber gun had a barrel length of approximately 440 inches (1117.6 CM), divided by the 8-inch bore to arrive at 55 caliber.

These 'treaty' heavy cruisers were each fitted with two catapults amidships to handle their embarked scout aircraft. The PENSACOLA, NORTHAMPTON, and PORTLAND class were fitted with a single centerline aircraft-handling crane, while the NEW ORLEANS class carried two cranes. Over the course of the war, the starboard crane and port catapult were removed from the NEW ORLEANS class in a weight saving measure. Their removal compensated for the additional top weight incurred with the addition of high mounted radar antennas.

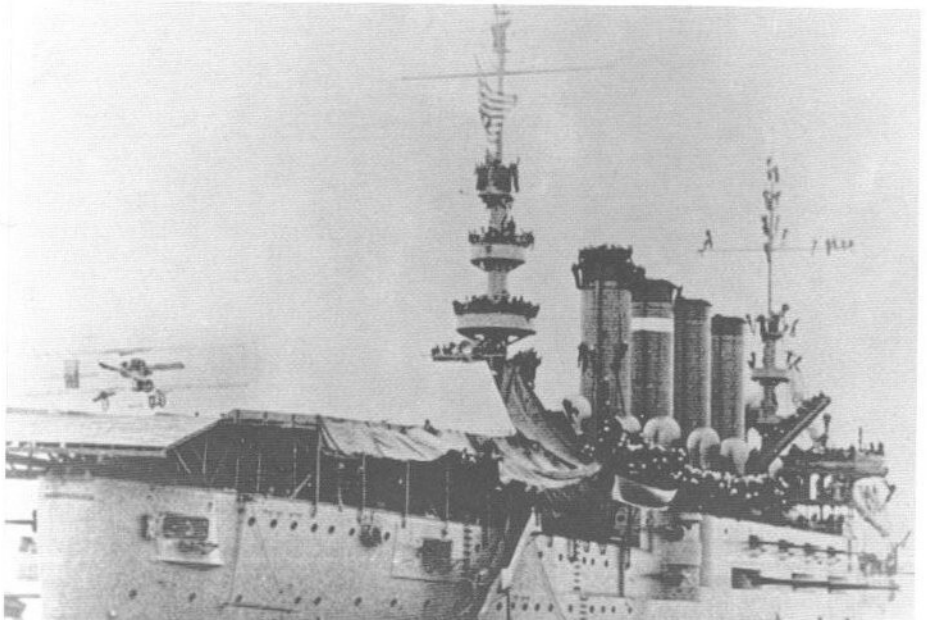
A four to six aircraft section from a Scouting Observation Squadron (VSO) was normally assigned to each heavy cruiser. Additional spare parts were carried aboard ship; in some instances, enough parts were carried to construct another aircraft. The aircraft were stored in the open on the twin catapults and on the aircraft handling deck on the PENSACOLA class and on catapults and in a large spacious hangar in the NORTHAMPTON, PORTLAND, and NEW ORLEANS classes. This hangar was located in the aft superstructure and was closed off with either hinged doors (NORTHAMPTON and PORTLAND classes) or a roll up hangar door (NEW ORLEANS class).

The scout aircraft embarked in the early 1930s was the Chance Vought **O3U Corsair** – a name that would strike great fear into the hearts of the enemy ten years later. The last O3U was purchased for the US Navy in 1936. The Curtiss **SOC Seagull** replaced the O3U on cruisers from 1936 and remained active until the end of the Second World War. Curtiss designed a replacement for the SOC, designated the **SO3C-1 Seamew**. The SO3C-1 was powered by an inverted inline engine and featured a single wing design. The Seamew first saw service on the

The PUEBLO (ACR-7, CA-7) was launched from Cramp and Sons as the COLORADO on 23 April 1903 and renamed in 1916. She appears to be painted with a white hull and a cream colored superstructure. The PUEBLO was armed with four 8-inch/40 caliber main guns in two turrets and 14 6-inch/50 weapons for her broadside armament. Her secondary armament consisted of 18 3-inch/50 and 12 3-pounder guns. (Real War Photos)



The PENNSYLVANIA (ACR-4, CA-4) was fitted with a platform on her quarterdeck, to allow Eugene Ely to land his Curtiss Golden Flyer biplane on 18 January 1911. This marked the first time an aircraft had landed on a ship. The PENNSYLVANIA was launched on 22 August 1903 and renamed the PITTSBURGH on 17 August 1912, when the US Navy began building battleships. (Real War Photos)



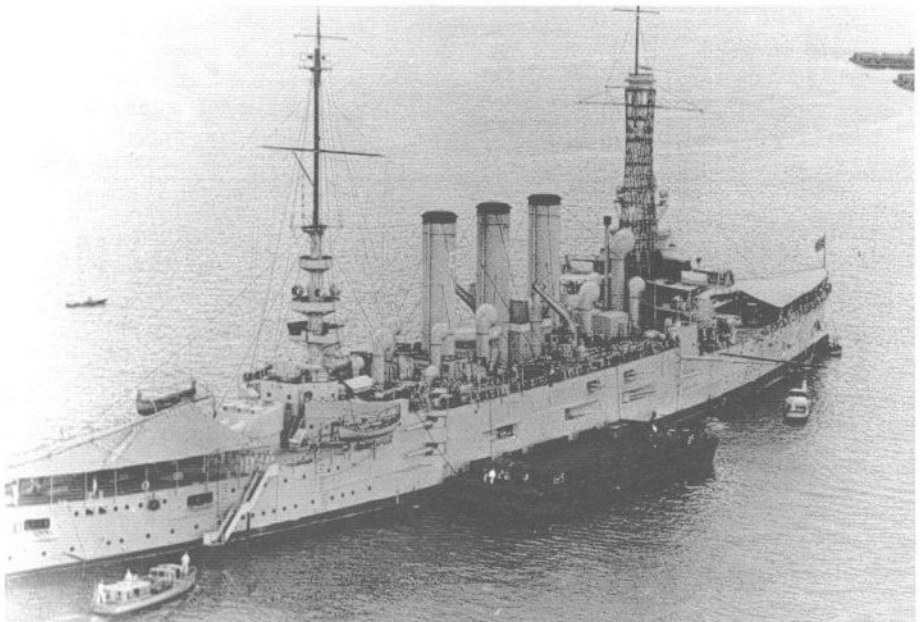
CHICAGO and CHESTER in late 1942 and early 1943. Their time aboard ship was short lived, since the Seamew was found to be totally unfit for service. The SO3C-1 was soon withdrawn from service.

The Vought **OS2U Kingfisher** began VSO service with the heavy cruisers in 1944, having performed sterling service on both light cruisers and battleships since 1940. Another Curtiss design began appearing on a few heavy cruisers in 1945. The **SC-1 Seahawk** was a single seat scout aircraft with improved performance over earlier scouts. The Seahawks' service aboard the cruisers was short, since their gunfire spotting role was taken over by radar. All aircraft and their associated catapult and aircraft handling equipment had been removed from the heavy cruisers by 1950.

The CHICAGO, AUGUSTA, and HOUSTON were designed from the outset as Fleet Flagships and thus had increased spaces for the Flag Officers and their associated staff built into an enlarged forecastle, which extended aft to the aircraft handling deck. The NORTHAMPTON, CHESTER and LOUISVILLE were designed as Division Flagships and consequently had less space than the Fleet Flagships. The INDIANAPOLIS was also designed as a Flagship and served in this role for the 5th Fleet during World War II.

Radar began appearing on heavy cruisers in 1940, with the appearance of the CXAM air-search device on the PENSACOLA, NORTHAMPTON, CHESTER, and CHICAGO. This radar's antenna was mounted high atop the foremast and originally on the CHICAGO's main mast before being moved to her foremast. SK, SC, and SK-2 radars soon replaced the CXAM in 1942. For surface search, the SG set was fitted; first in single units and later in pairs. The main battery of 8-inch guns was controlled by the MK-34 set in all the heavy cruisers except the NEW ORLEANS class. This class was already top heavy and the additional weight in the masts tended to further destabilize the ships. For fire control, the heavy cruisers were fitted with an FC radar antenna on top of the bridge or aft superstructure.

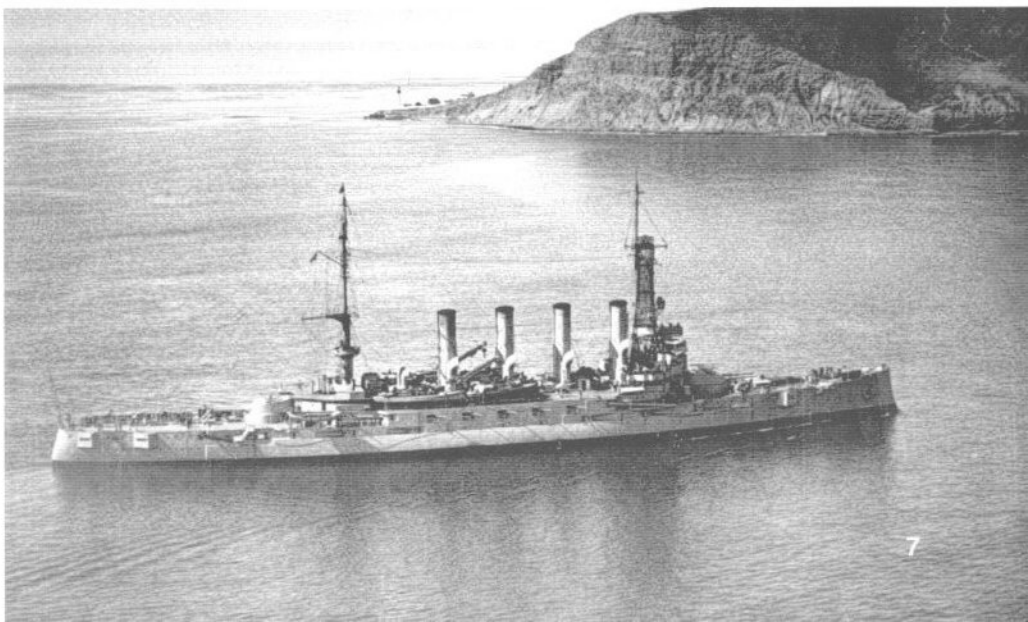
The PITTSBURGH (CA-4) was modified in 1922, when the 32 Niclausse boilers were removed and replaced with 16 Babcock and Wilcox boilers. These modifications resulted in one of her funnels being removed. The PITTSBURGH was armed with four 8-inch/40 caliber guns paired in two turrets. Her broadside armament consisted of 14 6-inch/50 Mk 6 guns and 18 3-inch/50s. In 1931, the PITTSBURGH was decommissioned and sold for scrap. (Real War Photos)



The 'treaty' heavy cruisers were put in harm's way in both the Atlantic and Pacific Theatres of action during the Second World War. These heavy cruisers earned a total of 151 Battle Stars, two Presidential Unit Citations and one Navy Unit Commendation – all in three years of war. These actions came with some US losses along the way. The war in the Pacific was just over two months old when the HOUSTON was sunk by gunfire and torpedoes from three Japanese cruisers and ten destroyers in Sunda Strait on 28 February 1942. On 9 August 1942, the US Navy suffered the greatest loss of heavy cruisers during the Pacific War when the ASTORIA, QUINCY, and VINCENNES were lost in the Battle of Savo Island, again falling victim to Japanese cruiser and destroyer gunfire and torpedoes. The NORTHAMPTON was lost off Lunga Point to Japanese destroyer launched torpedoes. During this battle, the NEW ORLEANS lost 120 feet (36.6 M) of her bow, the MINNEAPOLIS lost her bow up to the Number One turret, and the PENSACOLA was hit by one torpedo. The Japanese again had bested the US cruiser forces. The CHICAGO was lost on 30 January 1943, when she was hit in two separate actions off of Rennell Island, which saw no less than six Japanese air-launched torpedoes find their mark. The final loss of a US heavy cruiser – and the last major warship lost by the US – occurred during the night of 29/30 July 1945, just a few days before Japanese surrendered. The INDIANAPOLIS had delivered the Hiroshima atomic bomb components to Tinian and was steaming to Leyte when she was sunk by the Japanese submarine I-58. Over 800 of her crew survived the attack and abandoned ship to await rescue. No one knew the INDIANAPOLIS had been sunk – the quick rescue never came. Only 316 of her crew survived the sharks and lack of food and water until three days later when they were finally rescued – a truly sad day in naval warfare. The loss of 883 men with the INDIANAPOLIS was the worst at sea disaster in the US Navy's history.

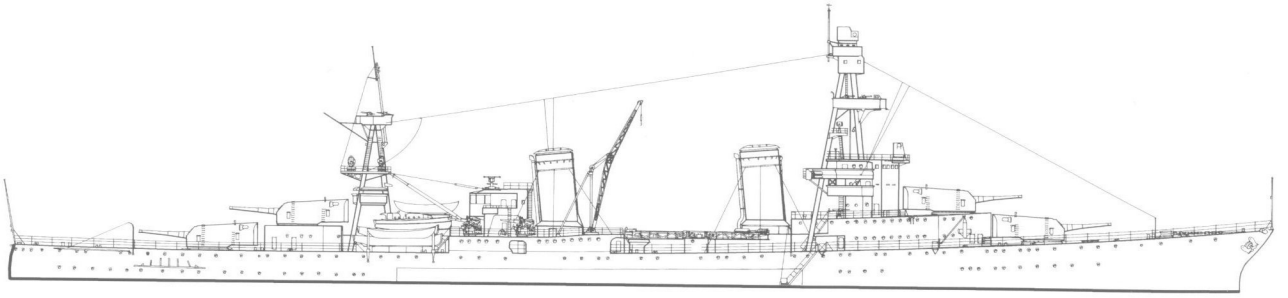
The US heavy cruisers were called upon to fight in the Second World War in both the Atlantic and Pacific Theatres, where they served with honor, while filling in for the larger battleships that had been damaged or lost at Pearl Harbor.

The WASHINGTON (ACR-11, CA-11) was launched from New York Shipbuilding on 18 March 1905; she was renamed the SEATTLE in 1916. This cruiser was armed with four 10-inch (25.4 CM) guns in two turrets and 16 6-inch (15.2 CM) guns in broadside casemates. Her secondary armament consisted of 22 3-inch/50 and 12 3-pounder guns. In 1941, the SEATTLE was reclassified as IX-39 and became a receiving ship. (Floating Drydock)

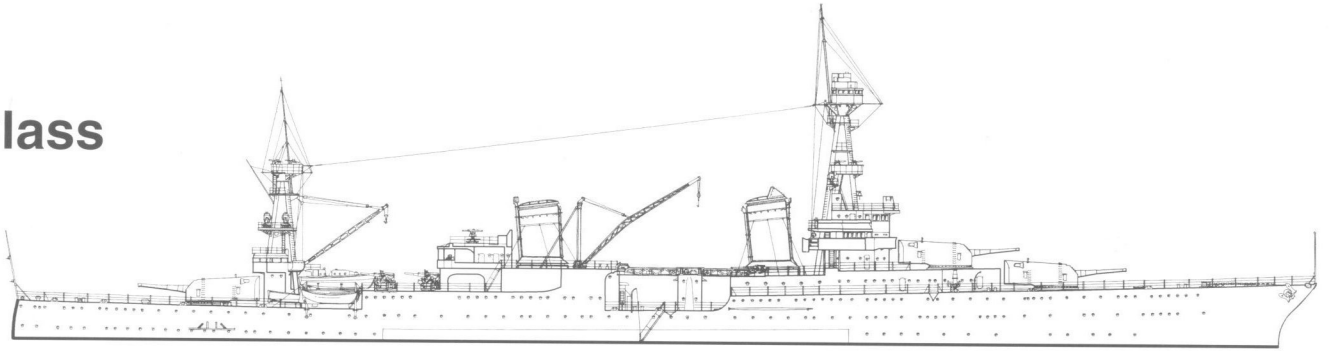


Development

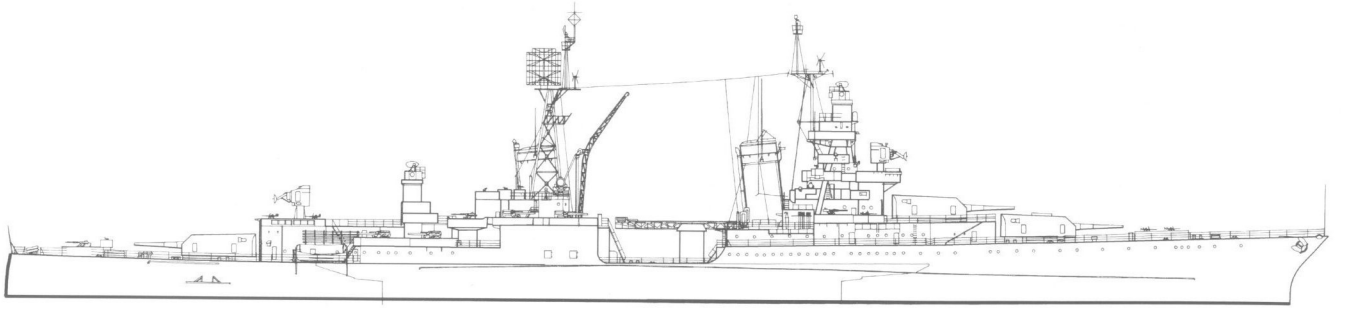
PENSACOLA Class



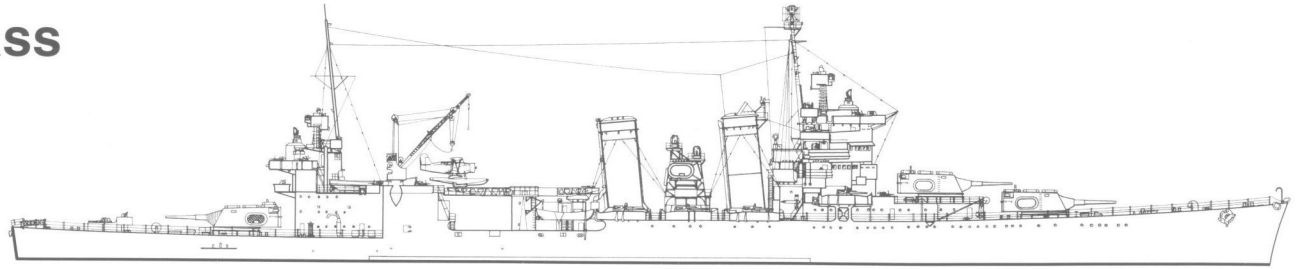
NORTHAMPTON Class



PORTLAND Class



NEW ORLEANS Class



PENSACOLA Class

The PENSACOLA class represented the first heavy cruisers built for the US Navy. Under the parameters of the 1921 Washington Naval Treaty, these ships were limited to 10,000 tons (9072 MT) displacement.

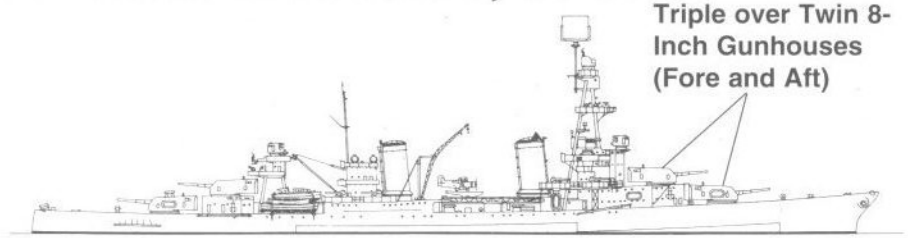
The two cruisers of the PENSACOLA class were the class leader PENSACOLA (CA-24), named for the Florida city that was – and is – the 'Cradle of Naval Aviation,' and the SALT LAKE CITY (CA-25), named for Utah's capital. The PENSACOLA was laid down at the New York Navy Yard on 27 October 1926 and launched on 25 April 1929. She was commissioned on 6 February 1930, following a work up and acceptance trials. The SALT LAKE CITY was laid down at the New York Shipbuilding Company in Camden, New Jersey on 9 June 1927 and launched on 23 January 1929. Following her acceptance trials, the SALT LAKE CITY was commissioned on 11 December 1929.

The PENSACOLA class hull was 570 feet (173.7 M) long at her waterline and 585 feet, 6 inches (178.5 M) in overall length. This 15-foot (4.6 M) difference in length was due in the clipper-style stem fitted to her bow. Her beam was 65 feet, 3 inches (19.9 M) and the draft was 22 feet (6.7 M). The PENSACOLA class' displacement was rated at 9100 tons (8255.5 MT), well under the 10,000-ton limit. Most of the shortfall was in armor protection and this gave these ships their nickname of 'Tin Clads.' With this serious lack of armor, one would have thought that torpedoes and large caliber guns would have easily taken out the PENSACOLA class once they engaged the enemy. A bit of luck and a lot of skill prevented either ship from becoming part of 'Davey Jones' Locker.' Full load displacement was rated at 10,826 tons (9821.3 MT) as launched and grew to 13,900 tons (12,610.1 MT) by the end of World War II. This increased displacement was due to the installation of added armor, increased anti-aircraft guns, radar, and electronic equipment.

The PENSACOLA class cruisers were lightly armored for heavy cruisers. The ship's belt armor – which ran along the side of the hull – ranged from 2.5 to 4 inches (6.4 to 10.2 CM) thick, with 2.5 inches in the magazine spaces. Machinery was protected with 1 inch (2.5 CM) and the deck was armored with 1 inch. The deck over the magazines was protected with 1.75 inches (4.4 CM) of armor. The turret barbettes protecting the gun platform were armored with only .75 inch (1.9 CM). The gunhouses were armored with 2.5 inches on the face, 1.5 inches (3.8 CM) on the sides, and .75 inch on the roof.

Both the PENSACOLA and the SALT LAKE CITY were provided with eight White-Forster boilers, which provided steam for the four Parsons turbines. A maximum speed of 32 knots (59.3 KMH) could be achieved with 107,750 horsepower available. These cruisers bunkered 3952 tons (3585.3 MT) of fuel oil, which provided a range of 10,000 nautical miles (18,531.3 KM) at a speed of 15 knots (27.8 KMH).

PENSACOLA Class, 1942



The PENSACOLA (CL-24) was the lead ship of the first class of US cruisers designed following the First World War. The PENSACOLA class ships were armed with ten 8-inch (20.3 CM) guns in an unusual arrangement: fore-and-aft three-gunhouses mounted above two-gun gunhouses. She carried CXAM radar at the foretop with FC fire-control radar just below. The PENSACOLA was camouflaged in Measure 21, the Navy Blue System, during 1942. (Floating Drydock)

A Vought OS2U Kingfisher is launched from the PENSACOLA's port catapult in early 1943. The ship's crew always watched the launching because it was a real event, since the launch sometimes failed to work properly and the aircrew would have to be rescued. The PENSACOLA and other heavy cruisers relied on scout aircraft to direct gunfire and provide some liaison services. By 1945, radar had assumed much of the scout aircraft's role during the war and the aircraft were beached. (Real War Photos)

The PENSACOLA and her sister ship the SALT LAKE CITY (CA-25) were camouflaged in Measure 33/10d, the Medium Pattern System, from October of 1943 until May of 1944. The PENSACOLA's forward stack cap was painted black to distinguish her from the SALT LAKE CITY, which carried the same scheme. A single Curtiss SOC Seagull was spotted on her starboard catapult. (Real War Photos)

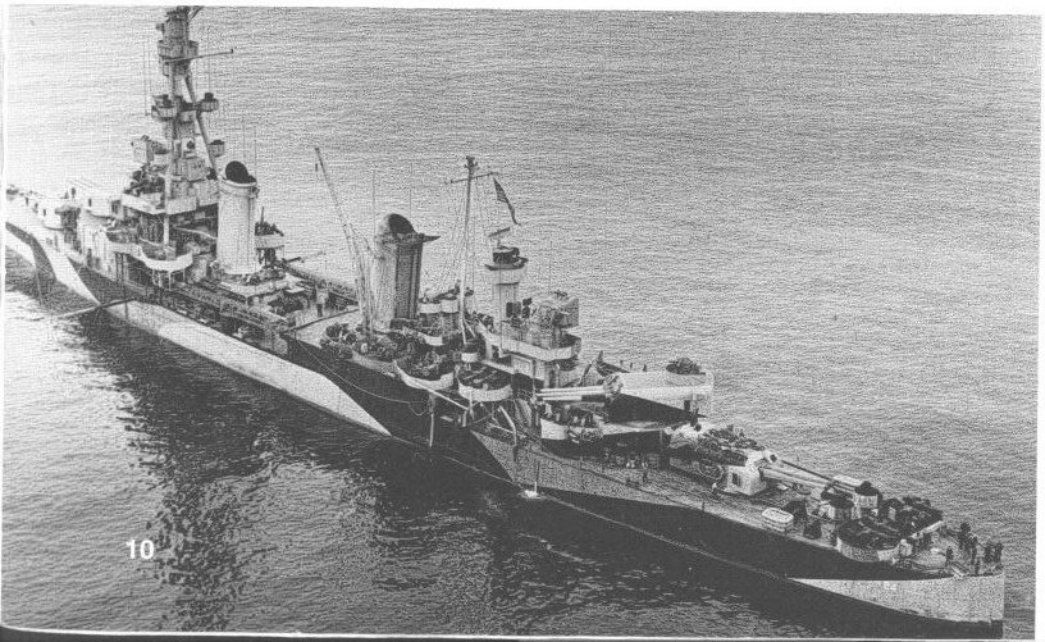
The PENSACOLA class was armed with ten 8-inch (20.3 CM)/55 caliber Mark 14 naval guns in unusual triple over twin gun-houses. The twin 8-inch gun mount weighed 418,000 pounds (189,604.8 KG), while the triple mount weighed 553,000 pounds (250,840.8 KG). The 8-inch gun had a muzzle velocity of 2800 feet (853.4 M) per second and a range – using Mark 19 armor piercing (AP) ammunition – of 31,700 yards (28,986.5 M), or approximately 18 miles (29 KM). The PENSACOLA was fitted with Mark 18 gun directors, while the SALT LAKE CITY carried Mark 22 directors. There were plans to add the Mark 34 gun director to these cruisers, but the idea was cancelled because the resulting top weight would have been too great.

Secondary armament consisted of eight 5-inch (12.7 CM)/25 caliber dual-purpose guns. The 5-inch weapon could be used for close-in shore bombardment as well as anti-aircraft defense. For light anti-aircraft defense, the water-cooled .50 caliber (12.7MM) Browning M2 machine gun was fitted around the bridge area in the late 1930s. These machine guns were eventually augmented with a pair of 1.1-inch (28MM) Mark VI quad machine cannons, known as 'Chicago Pianos.' This gun was found to be inadequate; however, it was the only high power, fully automatic weapon available to the US Navy. The 1.1-inch weapon served until the 40MM Bofors cannon became available from early 1942. The 20MM Oerlikon cannon replaced the .50 caliber machine gun as it became available in late 1941, although the .50 caliber weapon was retained until 1942. By 1943, the PENSACOLA class was armed with six quadruple 40MM cannons and 19 20MM guns in single mounts.

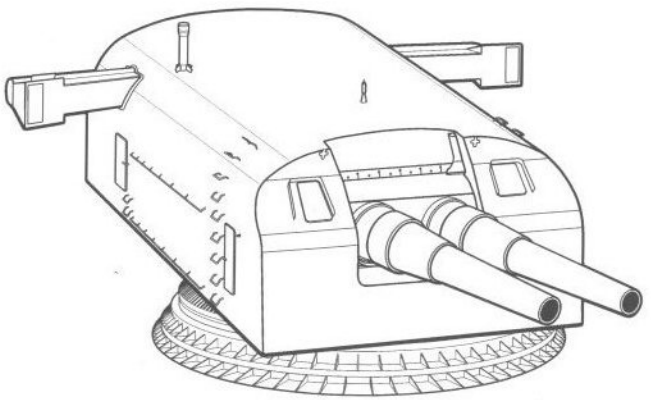
When built, the PENSACOLA class cruisers were fitted with two triple mount 21-inch (53.3 CM) torpedo tubes – one on either side of the hull amidships above the waterline. These tubes were removed before the war and beached. Eventually, the torpedo mounts found their way onto a number of the new class of destroyer escorts (DE) that were under construction.

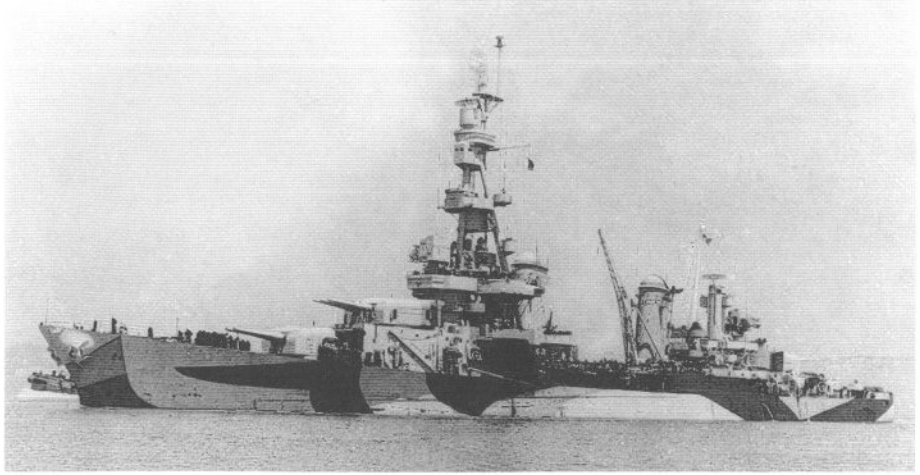
The PENSACOLA class cruisers were fitted with a pair of aircraft catapults and a single aircraft handling crane. Four aircraft were normally embarked and stored on the catapults or on the aircraft handling deck. The aircraft were stored in the open since the PENSACOLA class lacked hangar facilities. Aviation fuel was stored in a bow tank and piped along the hull side

The PENSACOLA's Number Three gunhouse is trained to the port front quarter while the ship lies at anchor in early 1944. She now carries the SK air-search radar and the SG sea-search radar at her foretop and another SG radar on her main mast. The PENSACOLA's anti-aircraft armament was increased with the addition of 20MM and 40MM cannons. (Real War Photos)



Twin 8-Inch (20.3 CM)/55 Gunhouse



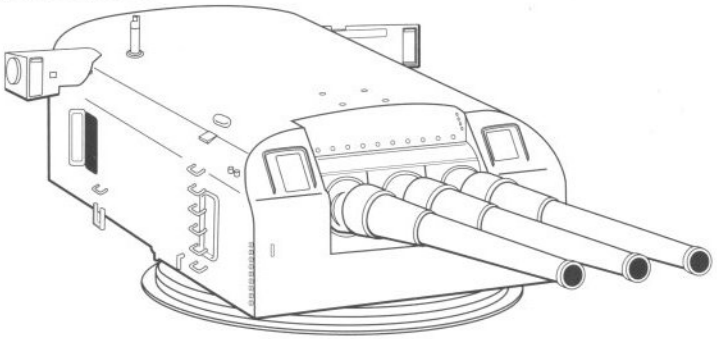


The PENSACOLA was repainted in camouflage Measure 32/14d, the Medium Pattern System, in 1944. The crane on the superstructure below the Number Two 8-inch gunhouse deployed the paravane, which was used to cut mine cables. Her foremast included a SG surface search atop the pole mast and a SK air search radar above the FC fire control radar. (Floating Drydock)

to the aircraft handling facility located amidships. The embarked aviation unit was classified as a Cruiser Scouting Squadron (VS and VCS) and were equipped with Vought O2U Corsairs, OS2U Kingfishers, and Curtiss SOC Seagulls in various models depending on the year. The Curtiss Seagull was the most common type of aircraft embarked with the Cruiser Scouting Squadrons.

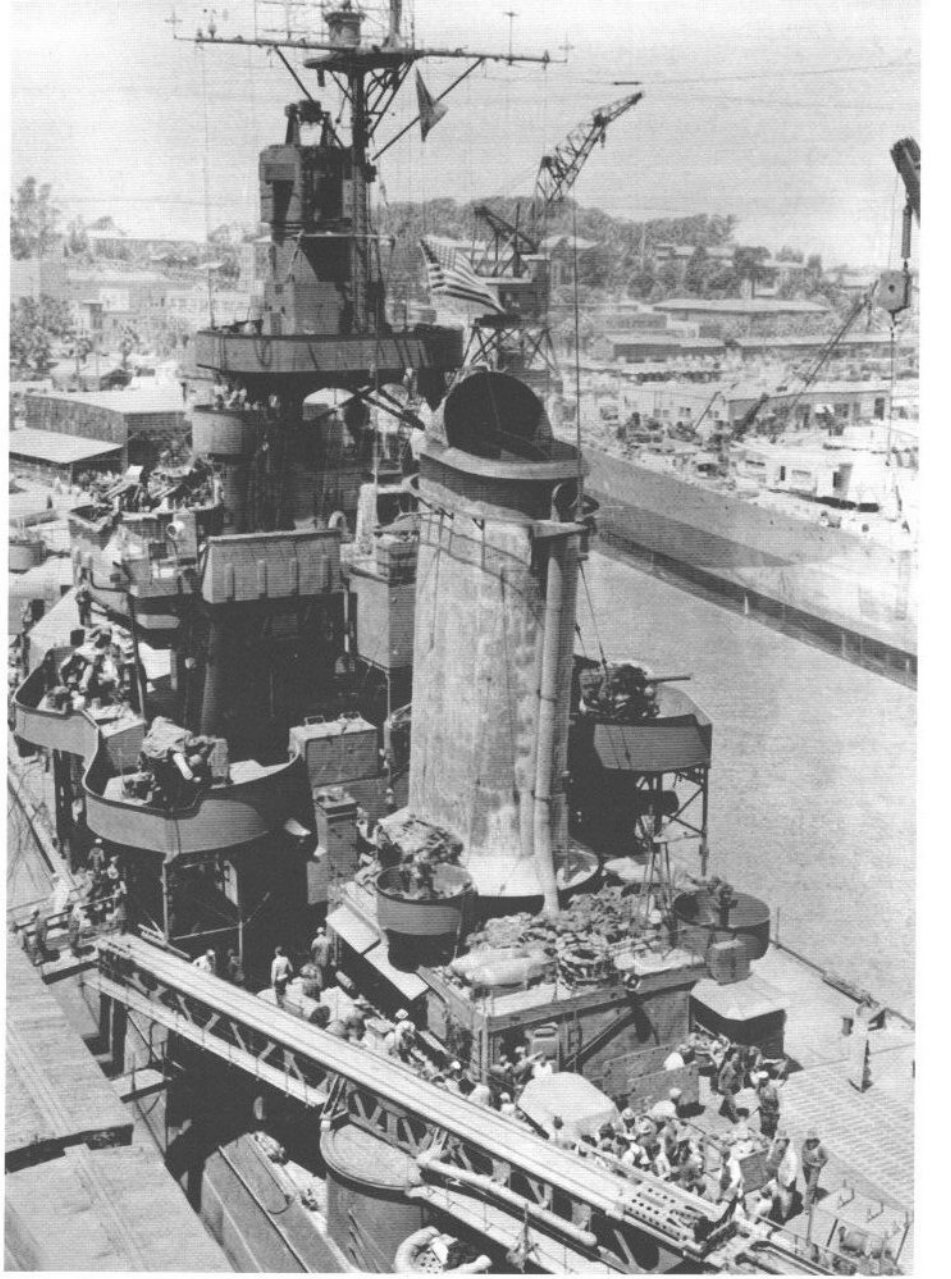
The PENSACOLA and the SALT LAKE CITY fought in most of the major engagements from Guadalcanal to Alaska, fighting the Imperial Japanese Navy and bombarding Japanese shore installations. The PENSACOLA earned 13 Battle Stars, while the SALT LAKE CITY earned 11 Battle Stars along with a Navy Unit Commendation for her actions during the Battle of the Komandorski Islands on 26 March 1943. In the latter engagement, a superior Japanese naval force attempting to reinforce the Japanese garrisons on Kiska and Attu in the Aleutians was turned back by US warships near Attu.

Triple 8-Inch (20.3 cm)/55 Mk 14 Gunhouse



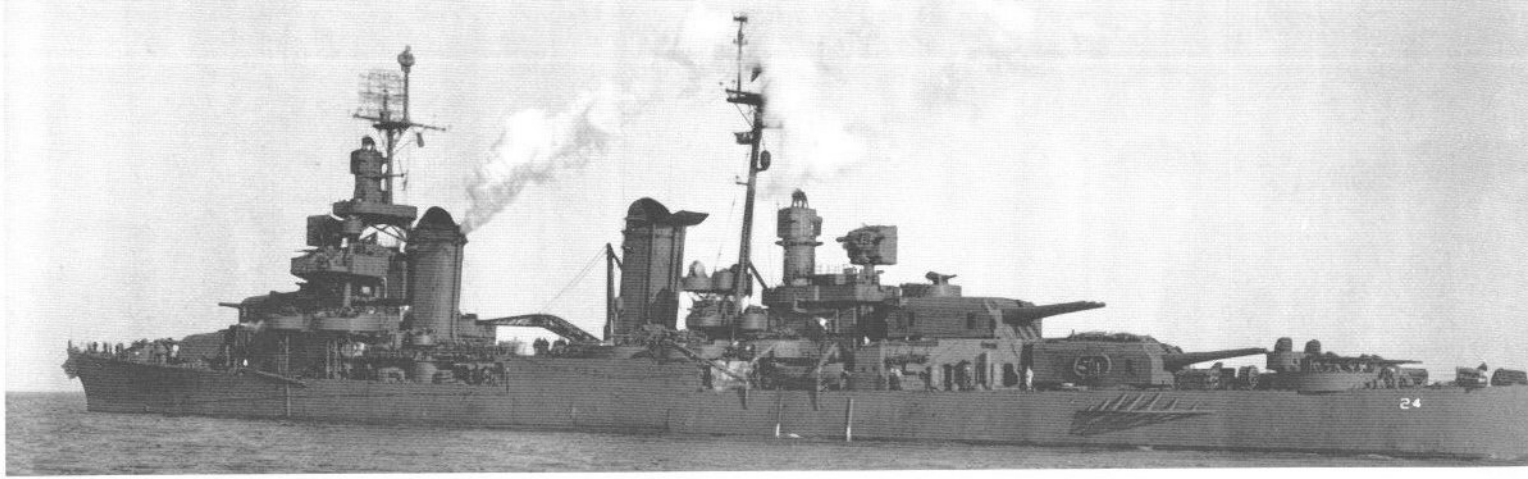
Sailors and dockworkers prepare the PENSACOLA to go back to sea in 1944. Her Number Two triple 8-inch guns are fully elevated. The Measure 32/14d paint scheme consisted of Black (FS37040), Light Gray (FS36320), and Ocean Gray (FS35164). The PENSACOLA's overall length was 585 feet 6 inches (178.5 m) and she displaced 13,900 tons (12,610.1 mt) at full load late in World War II. (Floating Drydock)

In 1945, the PENSACOLA underwent a refit at Mare Island, California and was camouflaged in Measure 21, the Navy Blue (FS35044) System. This refit included adding a quad 40MM mount on the forecastle and a SK-2 radar antenna on the main mast. These color and armament changes were for the sole purpose of defeating the Japanese *kamikaze* (suicide aircraft) attacks. The US Navy found the Navy Blue scheme the best ship color in the Pacific Theatre. (Floating Drydock)



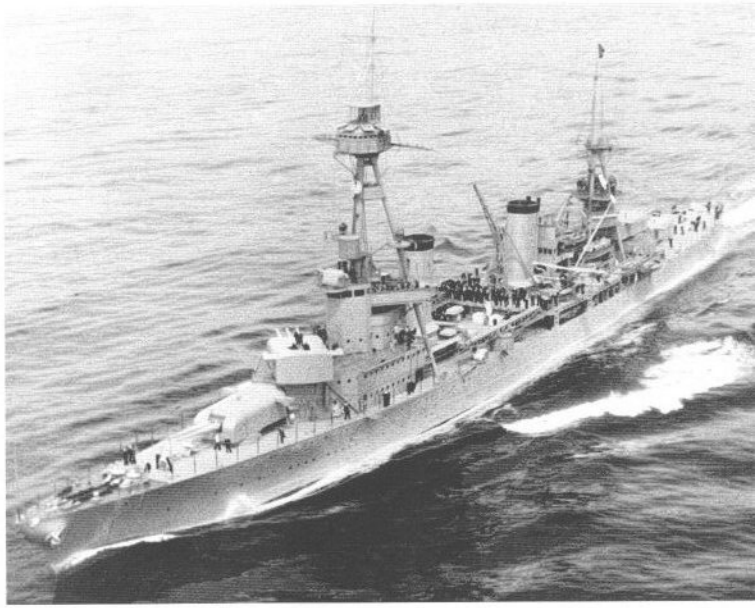
In 1945, the PENSACOLA's starboard catapult was removed to reduce the ship's top weight condition, which had grown with the addition of radar and anti-aircraft guns. The bandstands flanking the superstructure each contained a 5-inch (12.7 CM)/25 caliber dual-purpose gun. Additional gun directors for the 40mm anti-aircraft guns were installed during this refit. (Floating Drydock)

The PENSACOLA sails from Mare Island, California in 1945. The main mast was fitted with an SU surface search and SX and SK-2 air search radar, while the foremast carried the SK air search and SG surface search radar antennas. Smoke generator tanks used to create masking smoke were located on the quarterdeck. The propeller guard below the Number Four turret protected the forward propellers from damage caused by objects falling off the deck or from striking the wharf. (Floating Drydock)

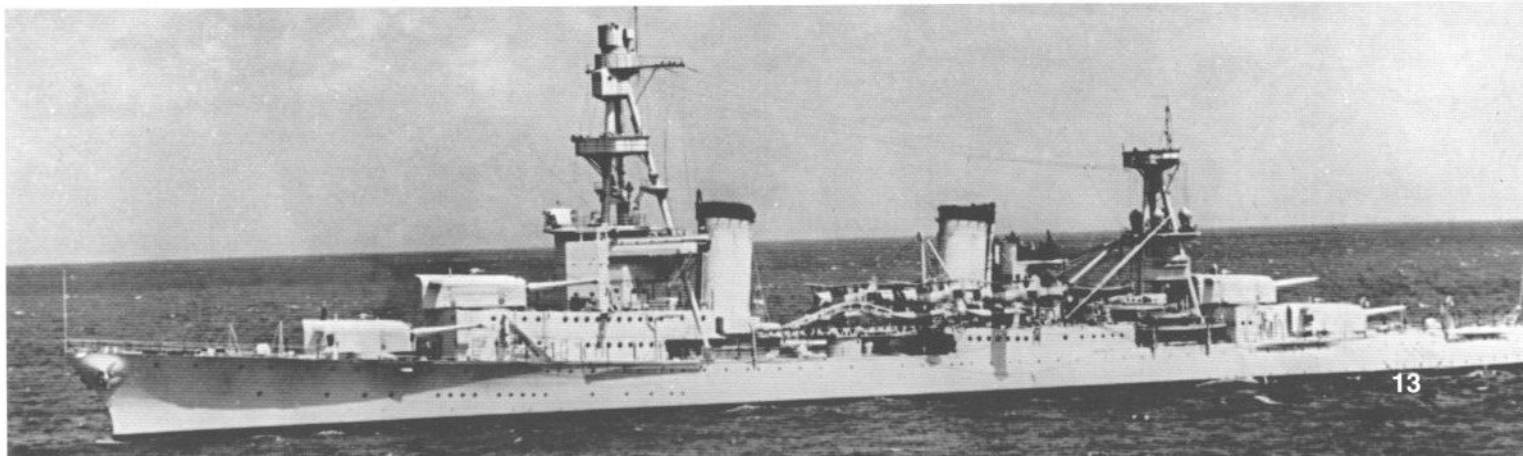


The PENSACOLA survived World War II, only to become a target in the Bikini Atoll atomic bomb tests in 1946. Her only damage was to her masts and stacks. These tests proved that large warships could survive in an atomic war and continue fighting, as long as the crew was protected. Following the Bikini tests, the PENSACOLA was sunk as a target in 1948. (Floating Drydock)

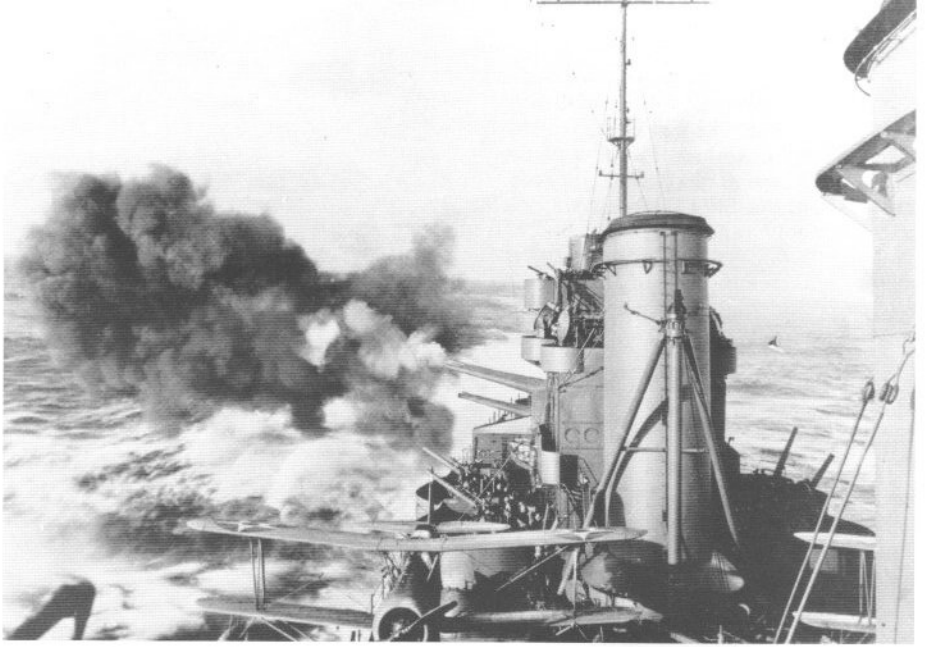
The SALT LAKE CITY (CA-25) was painted in Measure 3, the Light Gray (FS36320) system, in the mid 1930s. The decks were left in their natural teak wood finish. The ship's tall main and foremasts were soon cut down to reduce top-weight. A single Vought O2U-4 Corsair is positioned on the port catapult. Normally four of the scout aircraft would be carried aboard. The port triple 21-inch (53.3 CM) torpedo tubes were fitted just below the left catapult. (Real War Photos)



The SALT LAKE CITY wears Measure 3 Light Gray camouflage paint while cruising in the late 1930s. Radio antenna wires are strung between the main and foremasts for radio communications in both short and long wave bands. Her main mast would soon be changed to a pole type mast to lighten the top load. Curtiss SOC Seagulls were parked on her two catapults. (Floating Drydock)

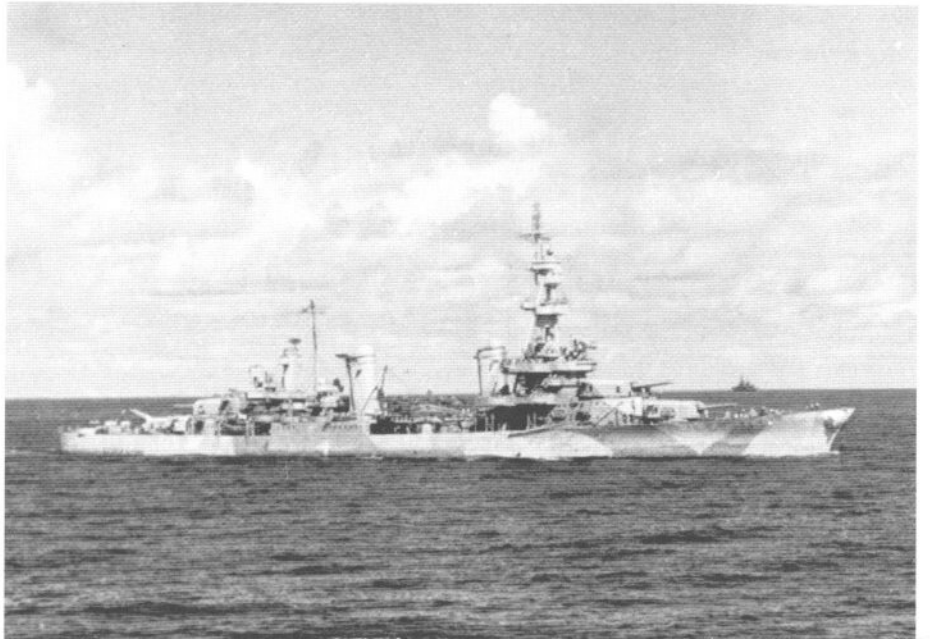


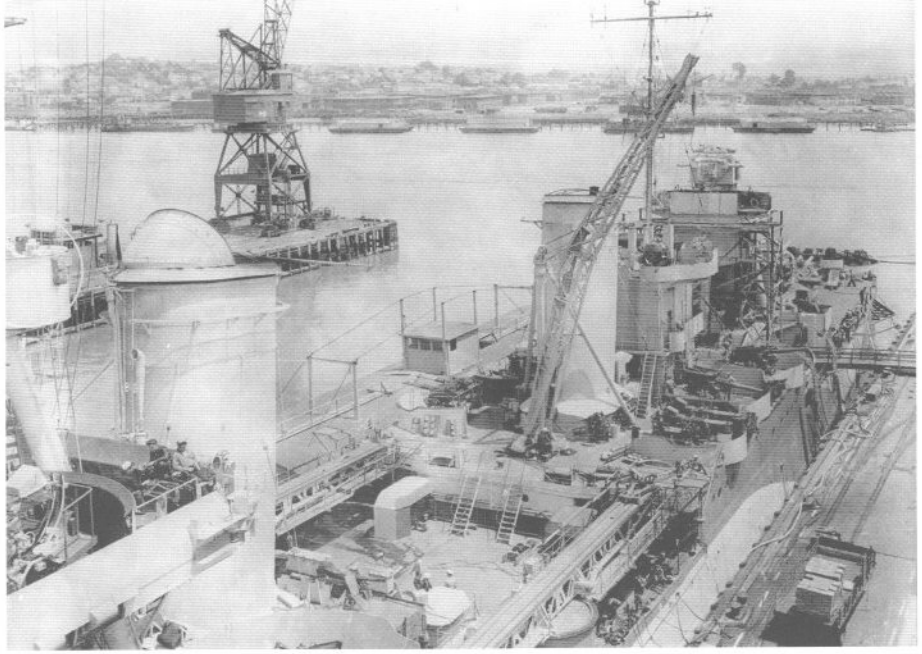
The SALT LAKE CITY was camouflaged in Measure 21, the Navy Blue System, in 1943. An SK air search radar was added to the top of her foremast, just above the SG surface search antenna. The FC fire control antenna is above the 8-inch gun fire-control station. The SALT LAKE CITY was being provisioned for another foray into the Pacific War Zone. (Floating Drydock)



The SALT LAKE CITY fires a salvo from her 8-inch guns during the US raid on Wake Island on 24 February 1942. The Japanese attacked and captured Wake the previous December. This raid reminded the Japanese that the US was still 'in the area.' An SOC Seagull is positioned on the starboard catapult. (Real War Photos)

The SALT LAKE CITY was painted in the same Measure 33/10d Medium Pattern scheme as her sister PENSACOLA (CA-24) from October of 1943 until May of 1944. Mounted on the catapults were two OS2U Kingfisher scout aircraft. The SALT LAKE CITY served in the Pacific Theatre during her entire World War II career and was fortunate to have not received much battle damage. (Real War Photos)





The SALT LAKE CITY's aft deck undergoes repair and refitting at the Mare Island Naval Shipyard in San Francisco, California in 1944. Changes were made during this overhaul to the cruiser's aircraft handling crane and radar gun directors. Additional electronic equipment and anti-aircraft weapons affected the ship's top weight, which resulted in reduced stability and gunfire accuracy. (Floating Drydock)

The SALT LAKE CITY received armor plating around the aft superstructure gun director during the ship's refit at Mare Island in 1944. Additional quad 40MM Bofors cannons were installed on the deck. An SG surface search radar was fitted atop the main mast, while a Mark 12 radar was added to the aft 8-inch gun director. (Floating Drydock)

The SALT LAKE CITY was camouflaged in Measure 32/14d while refitting at Mare Island in 1944. The tanker car on the wharf was topping off the forecastle aviation fuel tank. The foremast SG antenna was moved to a pole mast above the SK antenna to increase the SG's operating range. Additional 20MM cannons and Mk 51 gun directors were installed during this refit. (Floating Drydock)

NORTHAMPTON Class

The NORTHAMPTON class cruisers, like those of the earlier PENSACOLA class, were designed under the 1921 Washington Naval Treaty, which limited the displacement of heavy cruisers to 10,000 tons (9072 MT). Like the earlier class, the NORTHAMPTONs came in under the tonnage limit by over 800 tons (725.8 MT).

The NORTHAMPTONs were improved PENSACOLAs, with changes in the superstructure that provided additional spaces for flag personnel and a hangar for the embarked scout aircraft. The main armament was reduced to nine 8-inch (20.3 CM)/55 caliber guns mounted in three triple-gun turrets – two forward and one aft.

The NORTHAMPTON class cruisers were 600 feet, 3 inches (182.9 M) in overall length and 582 feet (177.4 M) at the waterline. Their beam was 66 feet, 1 inch (20.1 M) and draft was rated at 23 feet (7 M). Peacetime displacement amounted to some 9200 tons (8346.2 MT) standard and 10,544 tons (9565.5 MT) full load. Wartime displacement climbed to 9350 tons (8482.3 MT) standard and 14,030 tons (12,728 MT) full load.

Power was provided by eight White-Forster boilers, which produced steam for the Parsons turbines that drove the ship's four screws. A total of 109,000 horsepower gave the NORTHAMPTONs a maximum speed of 33 knots (61.2 KMH). The fuel bunker held 3067 tons (2782.4 MT) of fuel oil, which provided the ship with a range of 10,000 nautical miles (18,531.3 KM) at 15 knots (27.8 KMH).

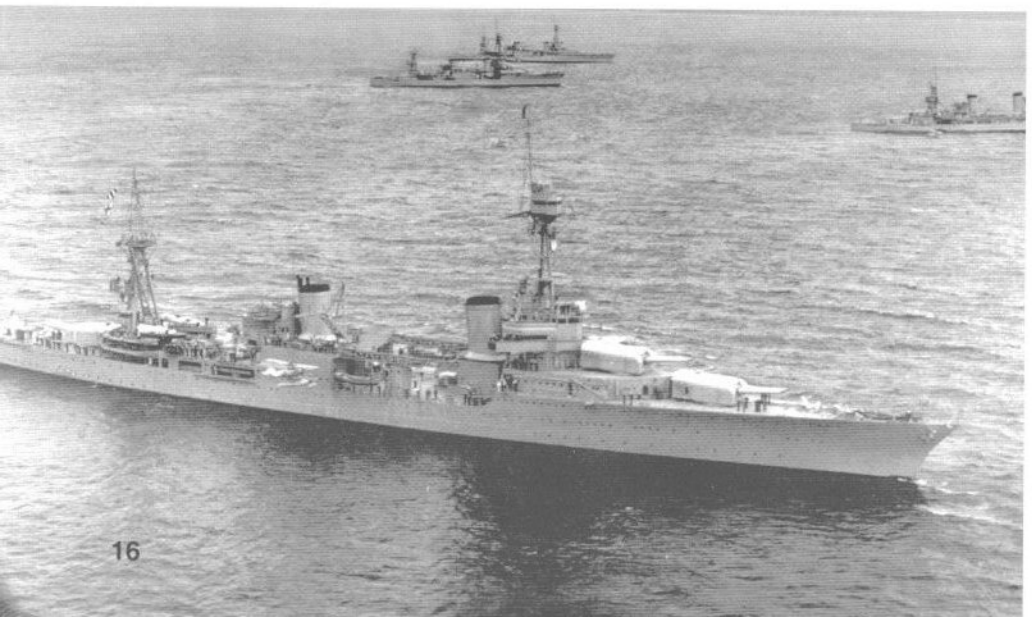
Armor on the NORTHAMPTON class was three inches (7.6 CM) along the hull belt with 2.5 inches (6.4 CM) around the magazine spaces. The deck was armored with 1-inch (2.5 CM) plating with two inches (5.1 CM) over the magazines. The barbettes were protected with 1.5 inches (3.8 CM), while the gunhouses were faced with 2.5 inches of armor. The gunhouses received 1.5-inch (3.8 CM) armor on the sides and .75 inch (1.9 CM) on the roof. The cylindrical conning tower was protected with 1.5 inches of armor. Comparing the Japanese TONE or MOGAMI class heavy cruisers to the NORTHAMPTON class reveals that the Japanese ships had 3.9 inches (9.9 CM) at the belt and 4.9 inches (12.5 CM) around the machinery spaces. Despite their additional protection, US torpedoes and bombs sank both TONE class and all four MOGAMI class cruisers.

The NORTHAMPTONs were armed with nine 8-inch (20.3 CM)/55 Mark 14 Mod 0 or Mod 1 guns arranged in three gunhouses. The number two mount was superimposed to fire over the number one mount forward, while the number three mount was situated aft. The 8-inch guns had a range of 31,700 yards (28,986.5 M) or approximately 18 miles. The 8-inch guns were directed by the Mark 13 rangefinder and the Marks 6, 17, and 20 computers and trainers.

The NORTHAMPTONs' secondary armament consisted of eight 5-inch (12.7 CM)/25 caliber dual-purpose guns, which had a maximum range of 14,700 yards (13,441.7 M) – approximately 8.4 miles (13.5 KM) – when used on surface targets. These weapons had a maximum altitude of 27,400 feet (8351.5 M) when fired at an 85° angle against aircraft. The 5-inch guns were directed by the Mark 33 gun director. Initially, the .50 caliber (12.7MM) water cooled machine gun was fitted for anti-aircraft protection during the 1930s. This armament was found to be quite inadequate and was supplemented by a pair of 1.1 inch (28MM) quad mount machine-cannons in 1941. These guns were also found to be inadequate due to their complexity and excessive maintenance requirements and were replaced by 20MM Oerlikon cannons and 40MM Bofors cannons in twin and quad mounts, respectively. The NORTHAMPTONs were originally fitted with two triple 21-inch (53.3 CM) torpedo tubes mounted amidships within the hull below the aircraft hangars. The tubes were removed and beached before the start of the war in the Pacific. These torpedo tubes eventually found their way to US Destroyer Escorts (DEs).

The NORTHAMPTON class heavy cruisers were all fitted as Division or Fleet Flagships,

The NORTHAMPTON (CA-26) recovers an O3U scout aircraft off Pearl Harbor, Hawaii in 1933. Her sister ships, the CHICAGO (CA-29) and the LOUISVILLE (CA-28), are in the background, while the SALT LAKE CITY (CA-25) is off the port bow. The NORTHAMPTON served as the Flagship for Cruiser Division Four. She is camouflaged in the 'peace time' scheme of Light Gray (FS36320). (Elsilrac)



In 1940, the tops of the NORTHAMPTON's two fore turrets were painted with blue stripes, while the aft turret top received a blue disc. These markings were for a Pacific Fleet problem (exercise). She carries three VCS (Cruiser Scouting Squadron)-4 SOC Seagulls on her two catapults. The NORTHAMPTON's secondary armament of four 5-inch (12.7 CM)/25 guns were mounted immediately aft of the catapults. (Real War Photos)

with additional accommodations built into forecastle extensions, which went aft to the hangar deck area. The NORTHAMPTON, CHESTER, and LOUISVILLE were built as Division Flagships, while the CHICAGO, HOUSTON, and AUGUSTA were built as Fleet Flagships.

The NORTHAMPTON class was fitted to carry from four to six aircraft, although components for four more aircraft – including wings, engines, and floats – were stored in the ship's hangar. The aircraft could be launched from two catapults placed amidships, with a single centerline crane to bring the aircraft up to the catapults or out of the water. The aircraft type carried varied by year with the Vought **02U** and 03U Corsairs serving in the 1930s and the Curtiss SOC Seagull and Vought OS2U Kingfisher used during World War II. These aircraft were organized into Cruiser Scouting Squadrons (VSOs) and were assigned to the Cruiser Scouting Force, US Fleet.

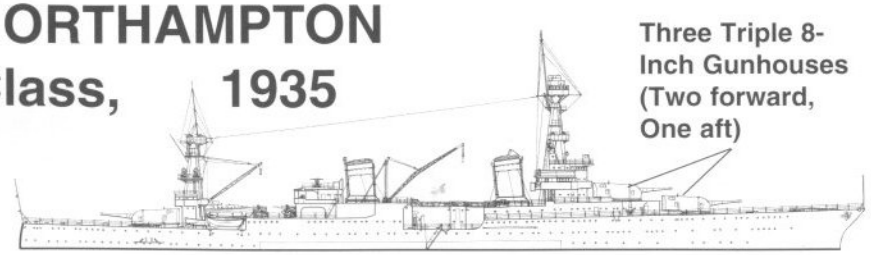
There were five builders of the NORTHAMPTON class, with the class leader NORTHAMPTON (CA-26) being constructed by Bethlehem Steel in Quincy, Massachusetts. The CHESTER (CA-27) was built by New York Shipbuilding in Camden, New Jersey; the LOUISVILLE (CA-28) by Puget Sound Navy Yard in Bremerton, Washington; and the CHICAGO (CA-29) by Mare Island Navy Yard in San Francisco, California. Both the HOUSTON (CA-30) and AUGUSTA (CA-31) were built by Newport News Shipbuilding in Newport News, Virginia. All six heavy cruisers were laid down in 1928 and all were commissioned by 1931. The six cruisers each cost approximately 50 million US dollars to construct.

When the war began for the United States on 7 December 1941, all of the NORTHAMPTONs – except the AUGUSTA, serving in the Atlantic – were in the Pacific. These five cruisers immediately began to take the fight to the Japanese. Three of the NORTHAMPTONs were lost in naval actions in the Pacific. The HOUSTON was sunk, along with the Australian cruiser PERTH, by Japanese gunfire and torpedoes in the Battle of the Sunda Strait off Java during the night of 28 February/1 March 1942. The class leader NORTHAMPTON was lost off Lunga Point, Guadalcanal in the Battle of Tassafaronga on 30 November 1942. During that action, the NEW ORLEANS, the MINNEAPOLIS, and the PENSACOLA were all hit by torpedoes and had to withdraw from the action. The final loss occurred on 30 January 1943, when the CHICAGO – hit by at least six aerial torpedoes – was sunk during a battle off Rennell Island in the Solomons.

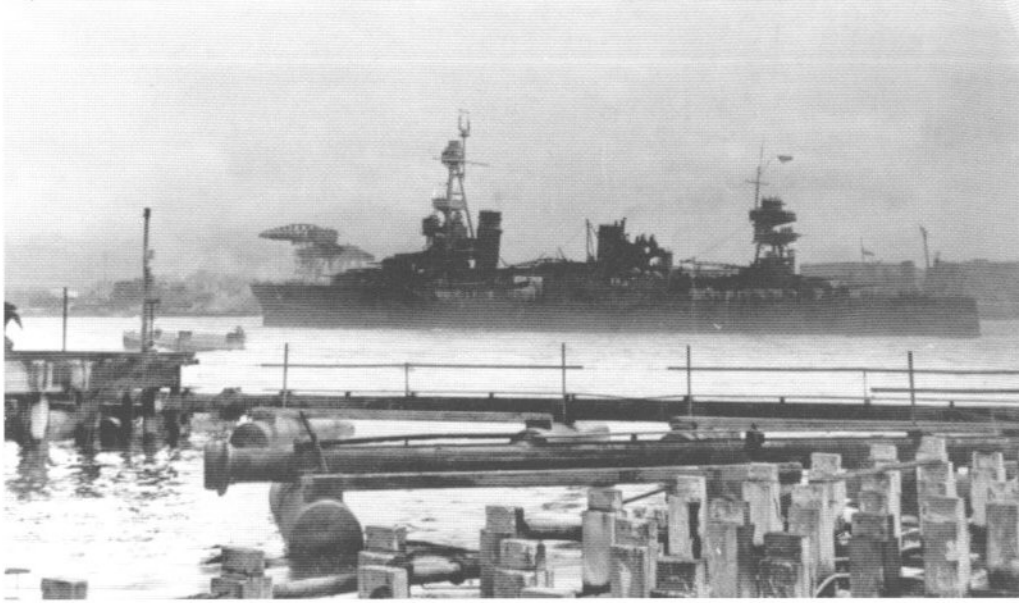
All six of the NORTHAMPTONs earned Battle Stars for their actions during the war years in the Atlantic and Pacific. The LOUISVILLE earned 13 for her actions in the Pacific, which began with escorting the carrier YORKTOWN (CV-5) on a raid against the Marshall-Gilbert Island Chain in February of 1942. The CHESTER was awarded with 11 Battle Stars for her actions – all of them in the Pacific. The class leader NORTHAMPTON was awarded six Battle Stars for her abbreviated service in the Pacific. The AUGUSTA and CHICAGO each earned three Battle Stars during the war, while the HOUSTON earned two Battle Stars and a Presidential Unit Citation for her actions in the Sunda Strait.

The NORTHAMPTON class, with all of their built in disadvantages, fought with distinction during World War II. Although three of the six heavy cruisers were lost, the ships continued to take the fight to the enemy and triumphed.

NORTHAMPTON Class, 1935

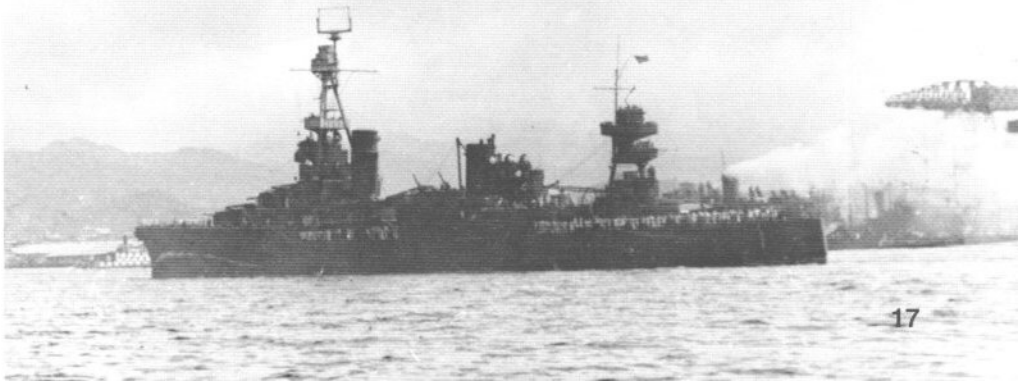


Three Triple 8-Inch Gunhouses (Two forward, One aft)



The NORTHAMPTON enters Pearl Harbor, Hawaii on 7 December 1941 after searching for the Japanese Fleet which has just destroyed the US Navy base and most of the Pacific Fleet battleships at anchor. She is camouflaged in Measure 1, the Dark Gray System, with Light Gray upper superstructure and a white false bow wave. The ship carried a CXAM air-search radar antenna atop her foremast. The NORTHAMPTON was sunk during the Battle of Tassafaronga, off Guadalcanal, on 30 November 1942. (Real War Photos)

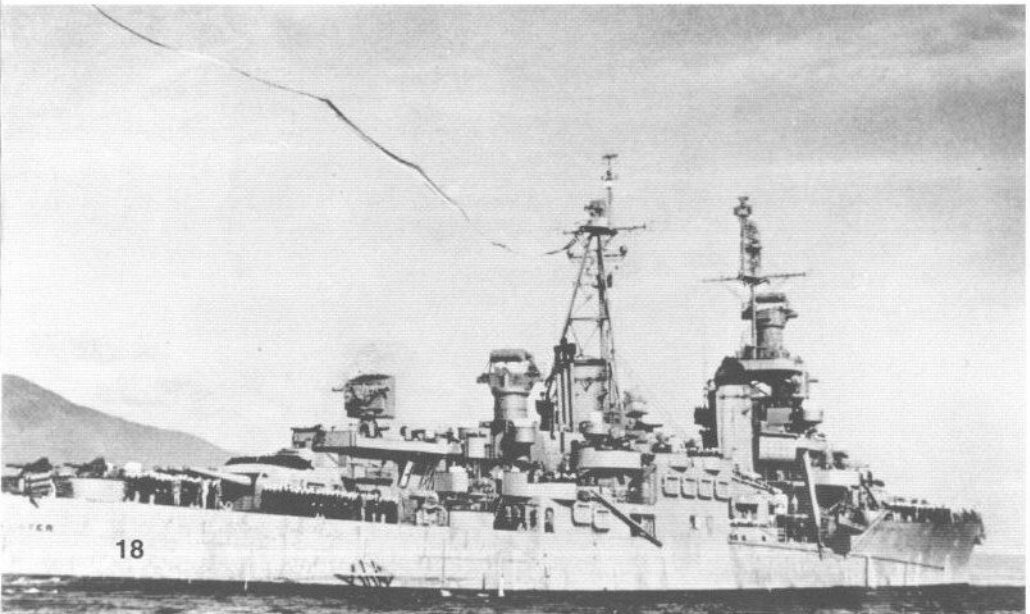
The NORTHAMPTON was assigned to the Special Task Force ordered to find the Japanese Fleet. She was escorting the carrier ENTERPRISE (CV-6) 200 miles (321.9 KM) west of Pearl Harbor when the Japanese attacked Pearl Harbor on 7 December 1941. Two of her Seagull scouts encountered a Japanese Zero 100 miles (160.9 KM) north of Pearl Harbor that morning, but this was not reported until the SOCs landed later that morning. The NORTHAMPTON won six Battle Stars for her actions in the Pacific. (Real War Photos)



The CHESTER (CA-27) leaves the Norfolk Navy Yard, Virginia on 30 July 1943. She was camouflaged in Measure 21 – the Navy Blue System – which painted the whole of the ship Navy Blue (FS35044). SG radar was fitted atop the main and foremasts and SK radar was fitted to the foremast. An SOC Seagull's main float rested on the starboard catapult. A paravane was placed on the starboard side of the forward superstructure. (Floating Drydock)

The CHESTER lies at anchor in Ulithi Harbor on 15 March 1945. Ulithi Atoll provided the US Pacific Fleet with a safe harbor where ships and sailors could take a well-needed rest. The cruiser was camouflaged in Measure 32/9d. Her port side boat boom is ready to tie up one of her ship's boats. The CHESTER's former boat storage deck now housed four 5-inch/25 caliber guns, two per side. (Real War Photos)

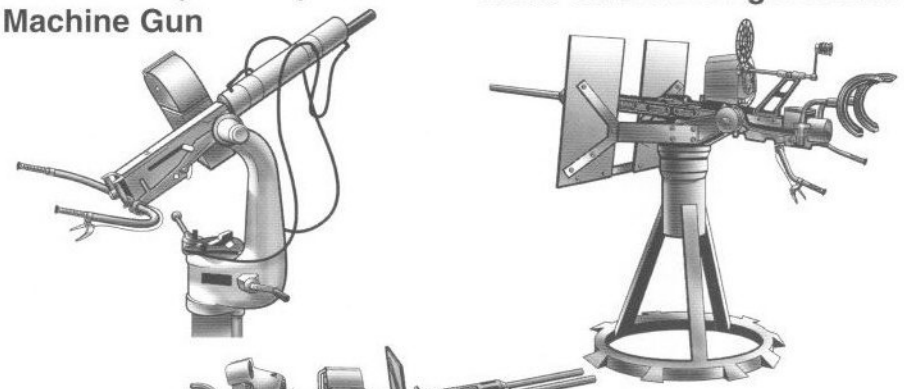
The CHESTER flies her 'coming home pennant' from the main mast on 30 October 1945. The pennant was supported by helium filled weather balloons provided by the ship's Meteorology Department. The gasoline line for the scout aircraft ran from the bow upward. The CHESTER earned 11 Battle Stars for her actions in the Pacific. (Real War Photos)



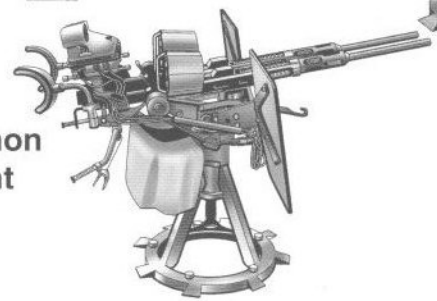
Light Anti-Aircraft Guns

.50 Caliber (12.7MM) Machine Gun

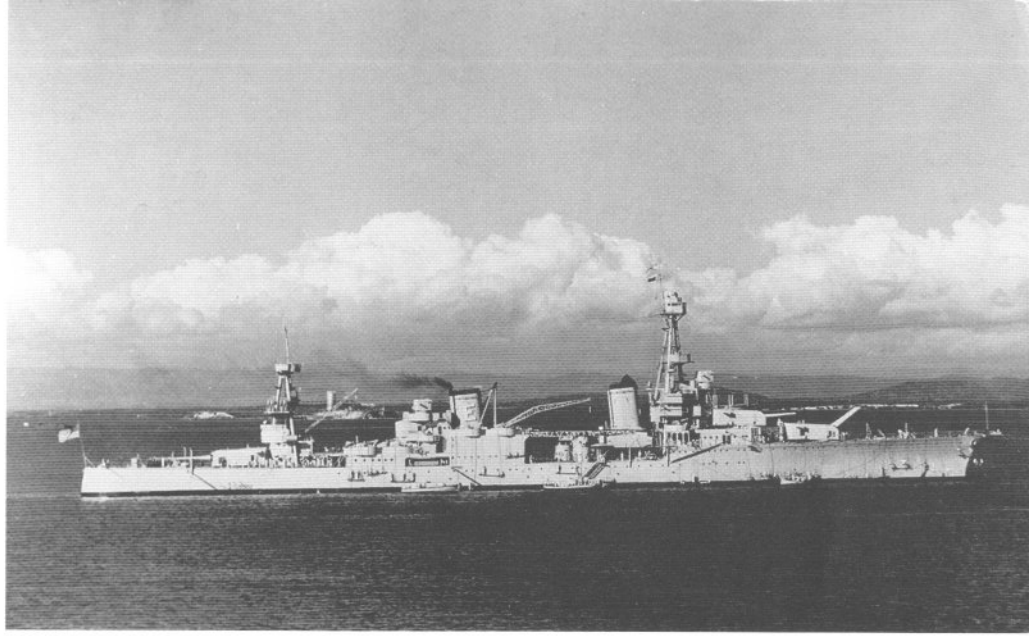
20MM Cannon Single Mount



20MM Cannon Twin Mount



The LOUISVILLE (CA-28) cruises off Pearl Harbor, Hawaii on 7 April 1931, shortly after her commissioning. Three of her Vought O3U-1 scouts were stored on the hangar deck. The photographic film used makes the tops of the aircraft's wings appear darker than the actual Chrome Yellow (FS13538) color. The LOUISVILLE was camouflaged in the standard Light Gray 'peace time' color scheme. (Real War Photos)

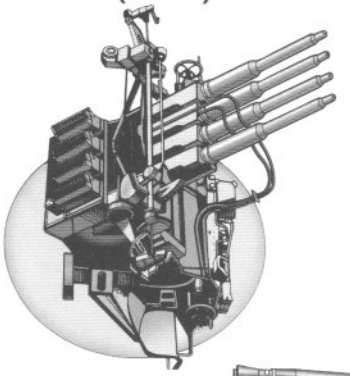


The LOUISVILLE lies at anchor in the mid 1930s. Her Number Two stack carries the Battle 'E' for Efficiency. Her torpedo tubes were still fitted, but would soon be removed. In 1940, her armament was increased to eight 5-inch (12.7 cm)/25 guns and four of the 3-inch (7.6 cm)/50s for increased anti-aircraft protection. The LOUISVILLE's hull is getting some attention from the 'rust' gang. The aircraft-handling crane is being used to deploy the ship's boats for shore leave. (Real War Photos)

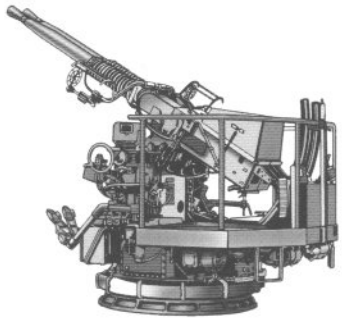
The LOUISVILLE flies her signal flags while cruising in the water off Hawaii on 22 November 1942. She was camouflaged in Measure 21, the Navy Blue System. Her Number Two stack has been plated over to provide a platform for her four searchlights. The aircraft hangar's deck was now fitted with four 5-inch/25 caliber anti-aircraft guns. FC fire control and SK air-search radars were placed atop the foremast. The LOUISVILLE was awarded 13 Battle Stars for her actions in the Pacific. (Real War Photos)

Medium Anti-Aircraft Guns

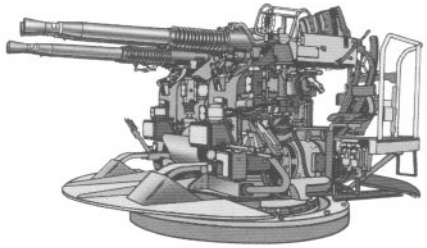
1.1-Inch (28mm) Quad Mount

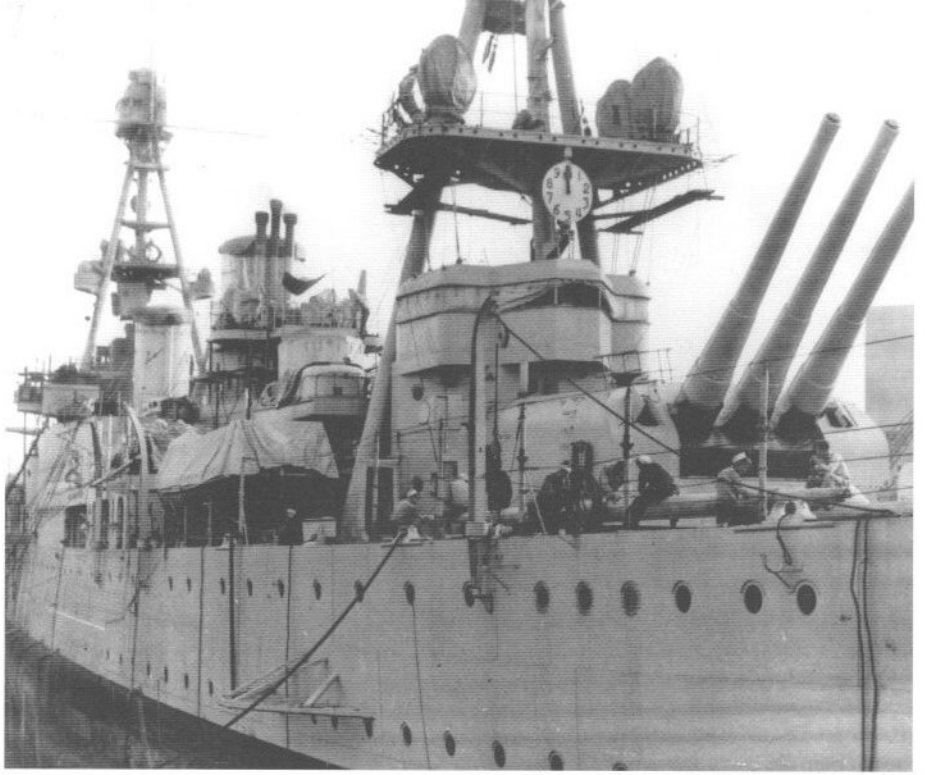


40mm Cannon Twin Mount



40mm Cannon Quad Mount

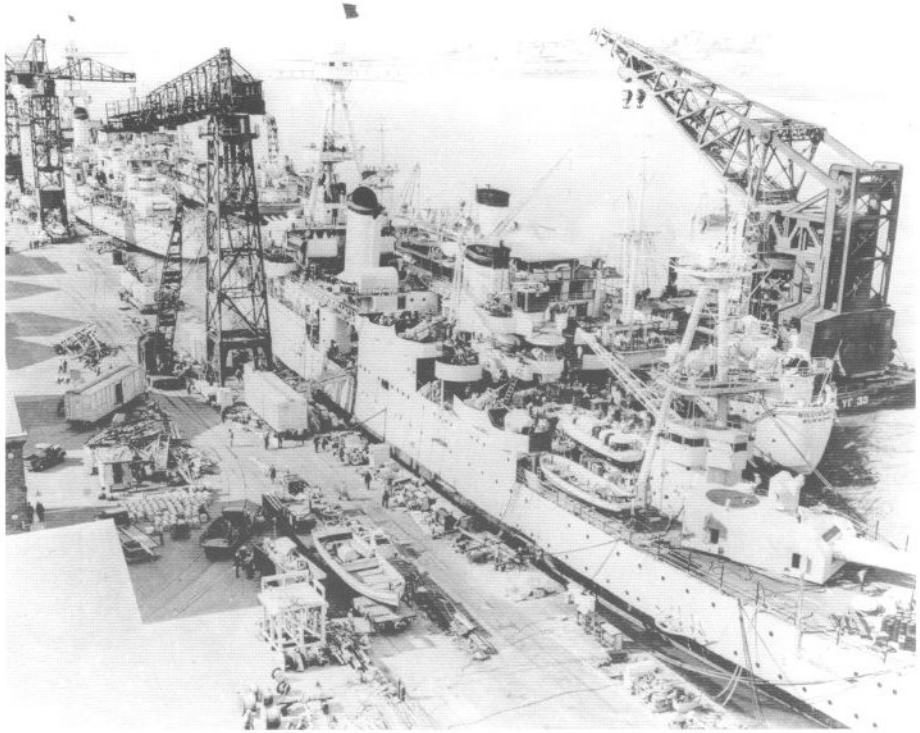




(Above Left) The CHICAGO (CA-29) was the Flagship of Cruiser Division Five on 31 May 1938. The Number Two turret displayed the red, white, and blue neutrality stripes carried by US Navy ships in Spanish waters during the Spanish Civil War (1936-1939). The four O3U-1 scouts on the hangar deck included one with a blue fuselage and silver wings and tail, indicating an Admiral's personal aircraft. (Real War Photos)

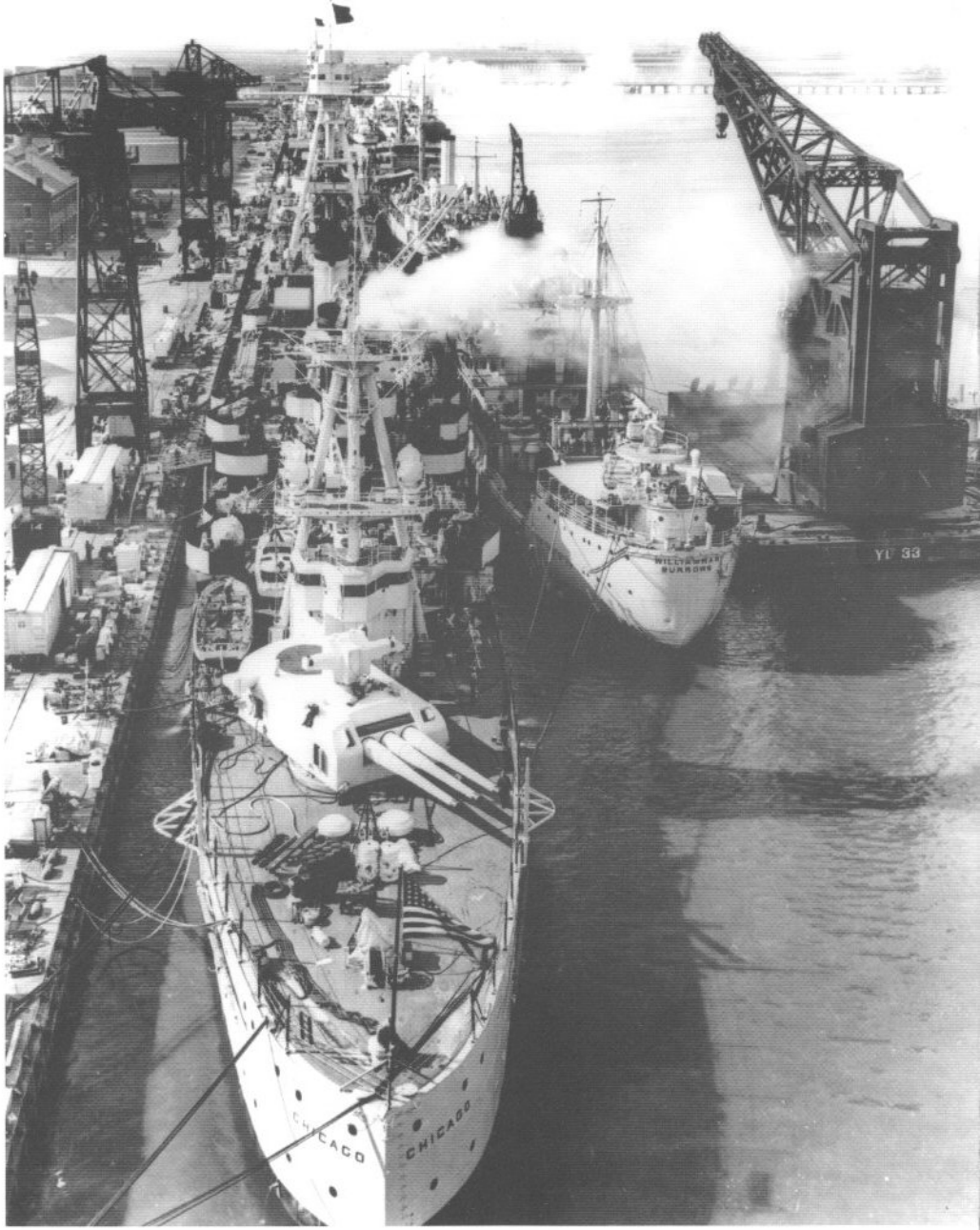
(Above) The CHICAGO lies in drydock for repairs during the mid 1930s. The dial on the main mast was called a concentration dial or range clock. This dial was used to relay the approximate range in yards of a target shrouded by smoke or haze. The sailors on the quarterdeck are cleaning and painting one of the many boat booms. All of the portholes along the hull sides were plated in when the war began. (Floating Drydock)

(Left) The CHICAGO cruises off the California coast in October of 1939. Her Curtiss SOC scouts from VCS-5 are positioned on the hangar deck. The cruiser's anti-aircraft armament has been increased with the addition of .50 caliber (12.7MM) water-cooled machine guns on the deck above the bridge. The CHICAGO was painted in Light Gray (FS36320) Measure 3, a scheme employed during peacetime. She was awarded three Battle Stars for her service in the Pacific before she was sunk off Rennell Island on 30 January 1943. (Floating Drydock)

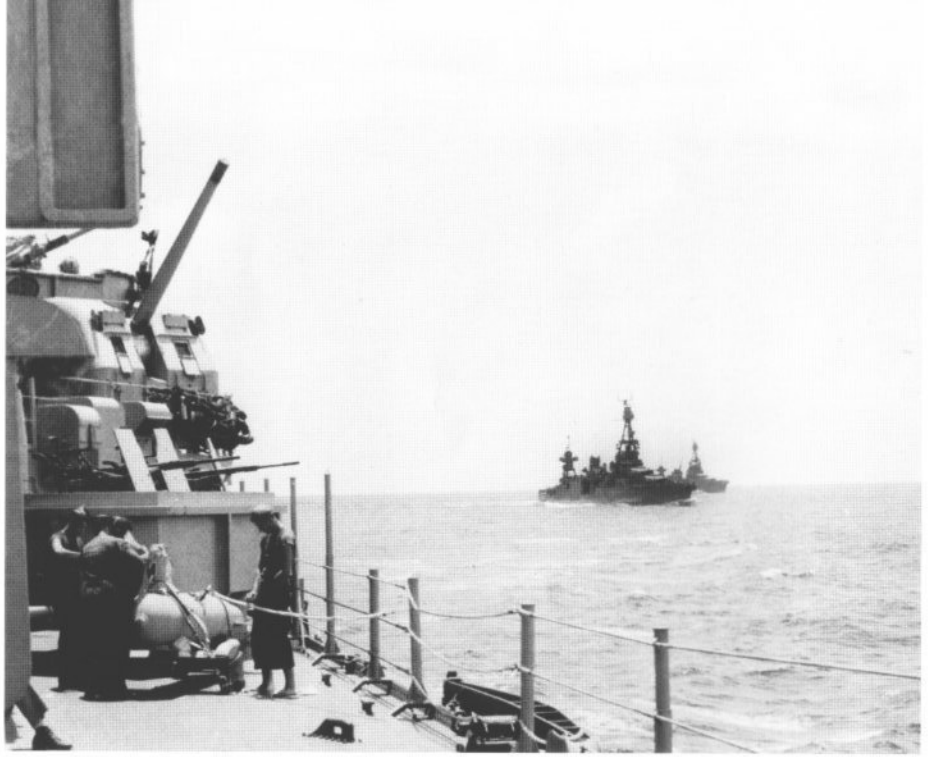


The CHICAGO is berthed along the wharf at Mare Island in 1940. The cruiser is being fitted with CXAM air search radar atop her main mast. Further modifications included the addition of shields around the 5-inch waist guns. The CHICAGO was painted in the Light Gray Measure 3 scheme.

The CHICAGO and the British cruiser HMS LEANDER share a harbor anchorage somewhere in the Pacific in 1942. The American and British fleets jointly operated in many of the early Pacific War battles. The CHICAGO wore Measure 14 and the LEANDER carried an Admiralty scheme. The LEANDER survived the war, while the CHICAGO was sunk off Rennell Island on 30 January 1943, after being hit by six aerial torpedoes. (Real War Photos)



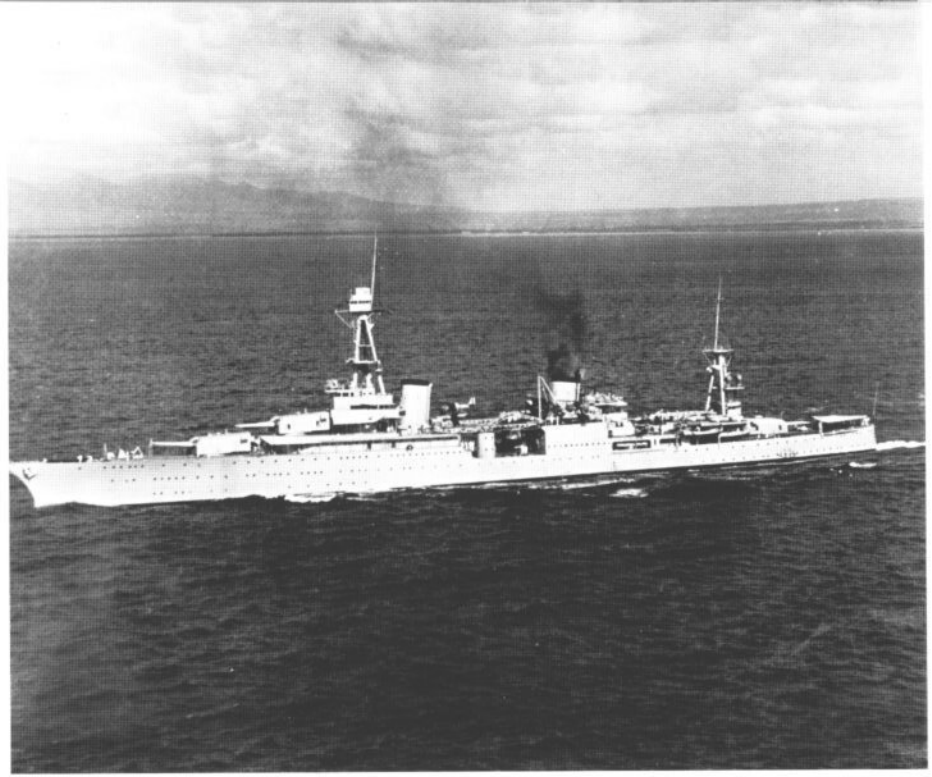
The CHICAGO is moored wharf side at Mare Island, near San Francisco, California in 1940. The Number Three turret carries a blue tactical marking used during a series of war games in 1940. This turret is also fitted with an optical rangefinder. The ship's name was in black raised letters on the light gray stern. (Floating Drydock)



(Above Left) The CHICAGO's CXAM radar was moved from the main mast to her foremast in 1942. The FC fire control radar sat atop the foretop, just below the CXAM antenna. Mk 31 radar controlled directors fitted fore and aft on the masts provided fire control for the 8-inch main guns. The CHICAGO was camouflaged in Measure 14, the Ocean Gray (FS35164) System. (Floating Drydock)

(Above) The CHICAGO sails between the WICHITA (CA-45) to her starboard side and the LOUISVILLE (CA-28) to her port. The three cruisers were on the way to the Solomons and Rennell Island on 29 January 1943. The WICHITA's deck crew is preparing to launch a paravane, in case mines were in the area. The CHICAGO carried CXAM radar atop her foremast. (Real War Photos)

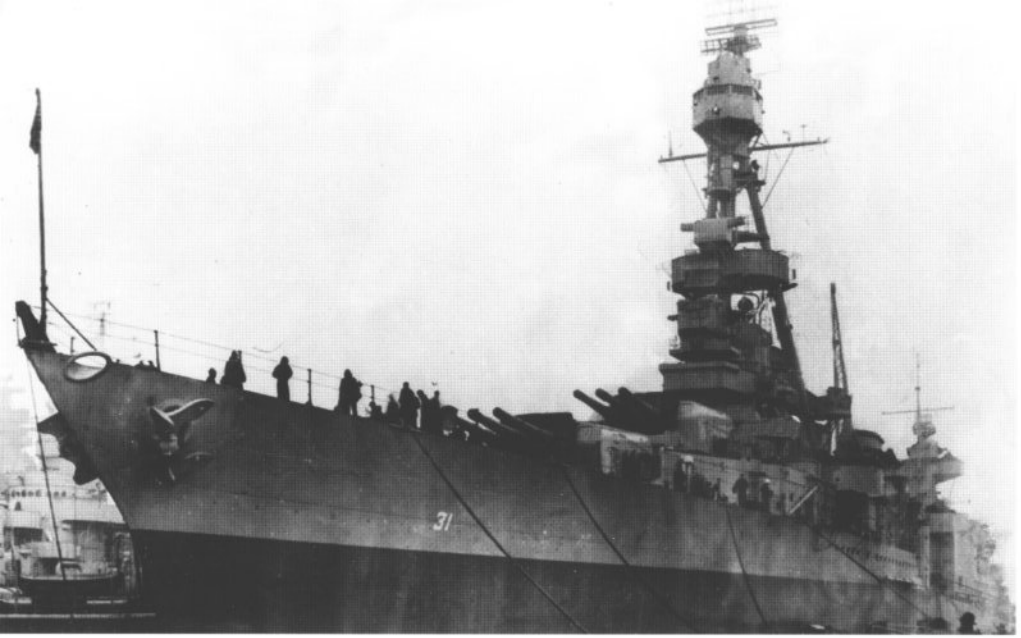
(Left) The HOUSTON (CA-30) cruises off San Diego, California in October of 1935. She displays the flag of the President of the United States, Franklin D. Roosevelt, on the main mast. The flag of Admiral Montgomery M. Taylor, Commander of the Asiatic Fleet, flies from the foremast. The Number Two stack displays an 'E' for Efficiency award. The four Vought O2U-3s from VS(Scouting Squadron)-10S are spotted on the catapults and the hangar deck. (Floating Drydock)



(Above) The HOUSTON sails off Hawaii in the early 1930s. Her triple 21-inch (53.3 CM) torpedo tubes were located on the well deck level. Three 03U Corsairs from VCS-4 were placed on the catapults and hangar deck. A canvas sheet covering the quarterdeck provides some shade from the hot Pacific sun. The HOUSTON was painted in Measure 3, the Light Gray (FS36320) 'peace time' scheme. (Real War Photos)

(Above Right) In late 1942, the AUGUSTA (CA-31) was painted in Measure 17 – a scheme which closely resembled a British Admiralty design – for the invasion of North Africa. The cruiser is leading the CHARGER (ACV-30, later CVE-30), an escort carrier used by the Allies for flight training, in December of 1942. The AUGUSTA had the SK air-search radar fitted to her foremast. (Real War Photos)

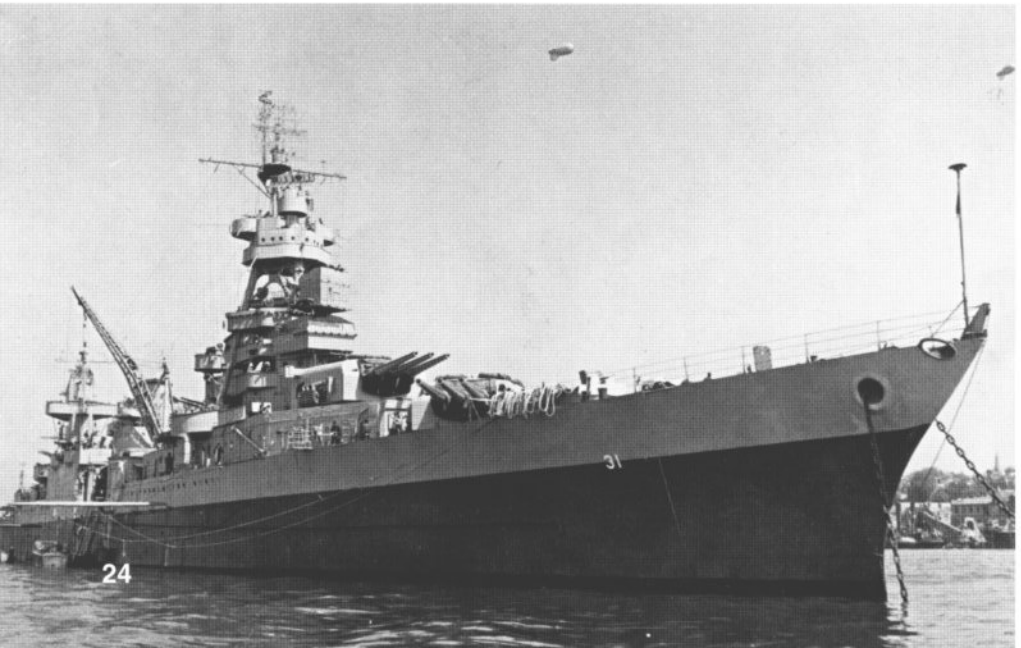
(Right) The AUGUSTA fires her 8-inch guns (20.3 CM) toward the shores of North Africa on 4 December 1942, during the invasion of Casablanca. On triple-gun turrets like this one, the center gun fired one second prior to the outer guns. This prevented the shells from colliding with each other on the way to the target. The 8-inch guns had a range of 31,700 yards (28,986.5 M) and a muzzle velocity of 2,800 feet (853.4 M) per second firing a 260-pound (117.9 KG) armor piercing (AP) round. The total weight of a single turret was 559,000 pounds (253,562.4 KG). (Real War Photos)



The AUGUSTA underwent an overhaul at the New York Navy Yard following the North African invasion in November of 1942. This 6 February 1943 photo shows some of the changes and additions made to the ship during the overhaul. The AUGUSTA is now painted in Measure 22, the Graded System, which was most effective in the Atlantic. She wore this scheme for the balance of the war. (Floating Drydock)

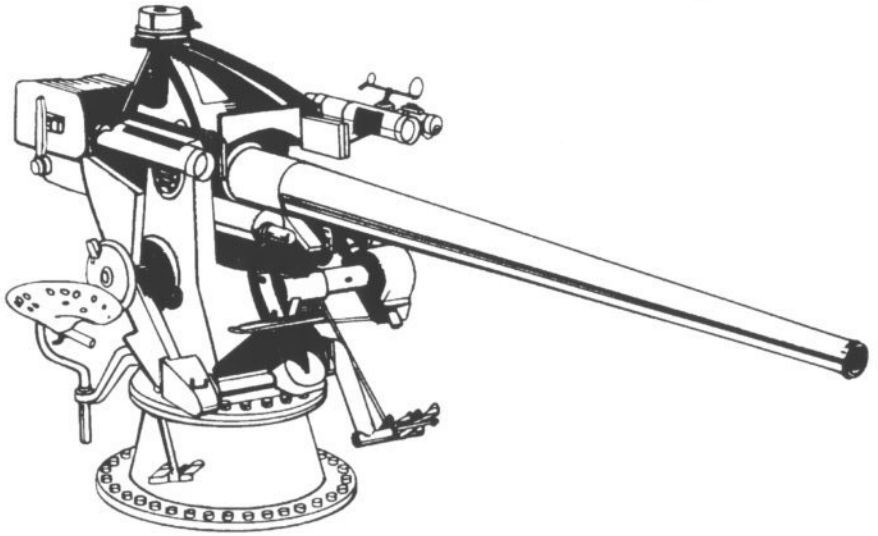
The AUGUSTA lies at anchor in Placentia Bay, Newfoundland in March of 1943. She wears Measure 22, the Graded System consisting of Navy Blue (5-N, FS35044) and Haze Gray (5-H, FS35237). Two Curtiss SOC-2s assigned to VCS-7 were fitted to the catapults. The AUGUSTA served in the Atlantic during the entire war, earning three Battle Stars for her actions. (Real War Photos)

The AUGUSTA, after providing fire support for the invasion of Normandy on 6 June 1944, was freshly repainted in Measure 22 in October of 1944. Her foremast carried both the SK air search and the SG sea search radars. Barrage balloons flying over the harbor prevented low flying German aircraft from making low-level attacks on the anchorage. (Real War Photos)



3-Inch (7.6 CM)/50 Caliber Gun

(Four of these weapons were fitted to each of the NORTHAMPTON class cruisers in 1940.)



PORTLAND Class

The PORTLAND class cruisers were originally envisioned to be five ships, which were to have been classified as light cruisers (CL). Only two ships — the PORTLAND (CA-33) and the INDIANAPOLIS (CA-35) — were actually built and these carried the light armor design of the previous 'treaty' heavy cruisers.

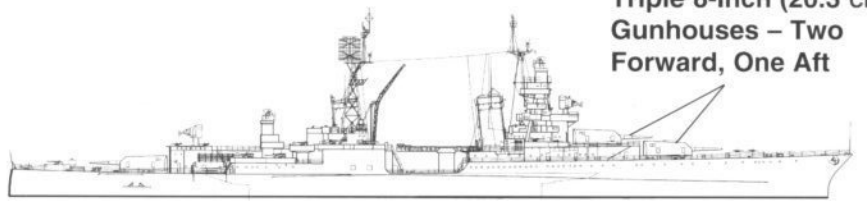
The PORTLAND class heavy cruisers were 610 feet, 3 inches (186 M) in overall length and 592 feet (180.4 M) at the waterline. Their beam was 66 feet, 1 inch (20.1 M) and the draft was rated at 24 feet (7.3 M) at full war load. Displacement, due to their added armor plating, grew to 9800 tons (8890.6 MT) standard and 11,574 tons (10,499.9 MT) full war load. Armor was five inches (12.7 CM) on a belt that ran along the side of the hull to protect vital engineering and magazine spaces. Magazine spaces also received 5.75 inches (14.6 CM) of armor at the bulkheads. An additional 2.5 inches (6.4 CM) of armor was fitted to the machinery spaces and bulkheads. The armor below the teak wood decking was 2.5 inches. The three gunhouses were each armored with 1.5 inch (3.8 CM) on the barbettes, 2.5 inches on the face, 1.5 inches on the side, and .75 inch (1.9 CM) on the roof. The conning tower was faced with 1.5 inch armor plate.

Power for the PORTLAND class was generated by eight Yarrow (White-Forster) boilers, which produced steam for the four Parson geared turbines. A total of 107,000 shaft horsepower, at 366 revolutions per minute, to the four outward turning screws allowed a flank speed of 33 knots (61.2 KMH). An oil capacity of 2125 tons (1927.8 MT) provided a range of 8640 nautical miles (16,011.1 KM) at a speed of 15 knots (27.8 KMH) or 4500 nautical miles (8339.1 KM) at 25 knots (46.3 KMH).

The main armament consisted of nine 8-inch (20.3 CM)/55 caliber Mark 14 Mods 0 and 1 in three triple mounts, contained inside lightly armored gunhouses. (The Mark 14 Mod 1 differed in minor details from the earlier Mod 0.) Each mount weighed approximately 559,000 pounds (253,562.4 KG) and fired a 260 pound (117.9 KG) projectile with a muzzle velocity of 2800 feet (853.4 M) per second. The armor piercing (AP) projectile's range was 31,700 yards (28,986.5 M) – approximately 18 miles (29 KM) – when the gun was elevated approximately 40°. The 8-inch guns were directed by the Mark 34 director.

The PORTLANDs' original secondary armament was eight 5-inch (12.7 CM)/25 caliber Mark 13 Mod. 0 guns placed amidships. Four of these weapons were situated on the deck above the aircraft hangar and the remainder were placed immediately aft, one deck down. The 5-inch/25s were dual-purpose weapons and could be used against both aerial and surface targets. The 5-inch guns had a range of 14,500 yards (13,258.8 M) at a 45° elevation and 27,400 feet (8351.5 M) at an 85° elevation. This assembly weighed 21,760 pounds (9870.3 KG) when ready for action. The 5-inch guns were directed by the Mark 32 gun director. Eight .50 caliber (12.7MM) water-cooled machine guns were mounted around the conning tower for additional, close-in anti-aircraft protection.

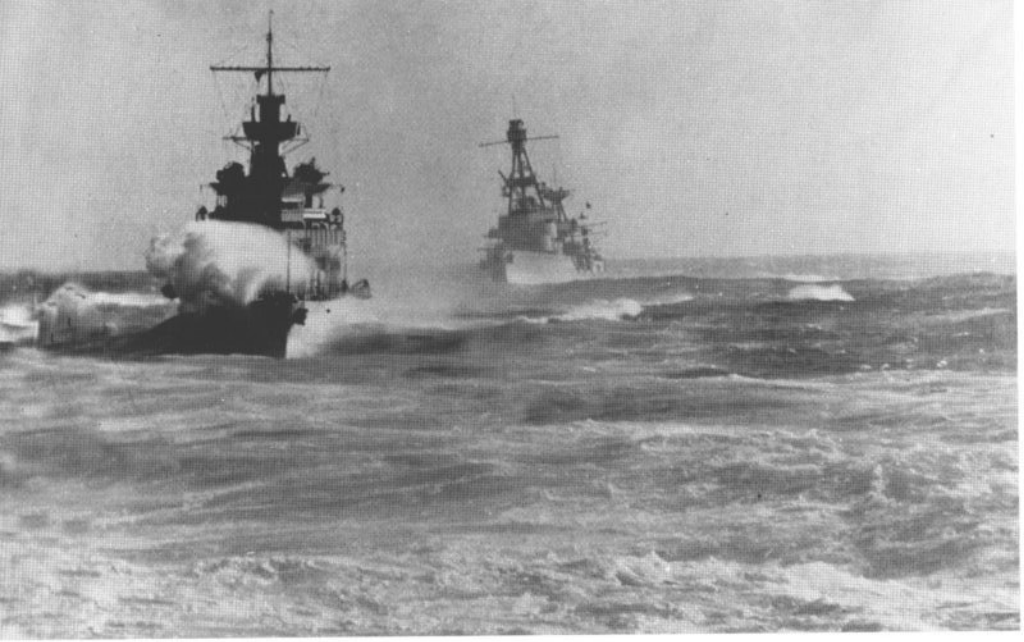
PORTLAND Class, 1945



Triple 8-Inch (20.3 CM) Gunhouses – Two Forward, One Aft

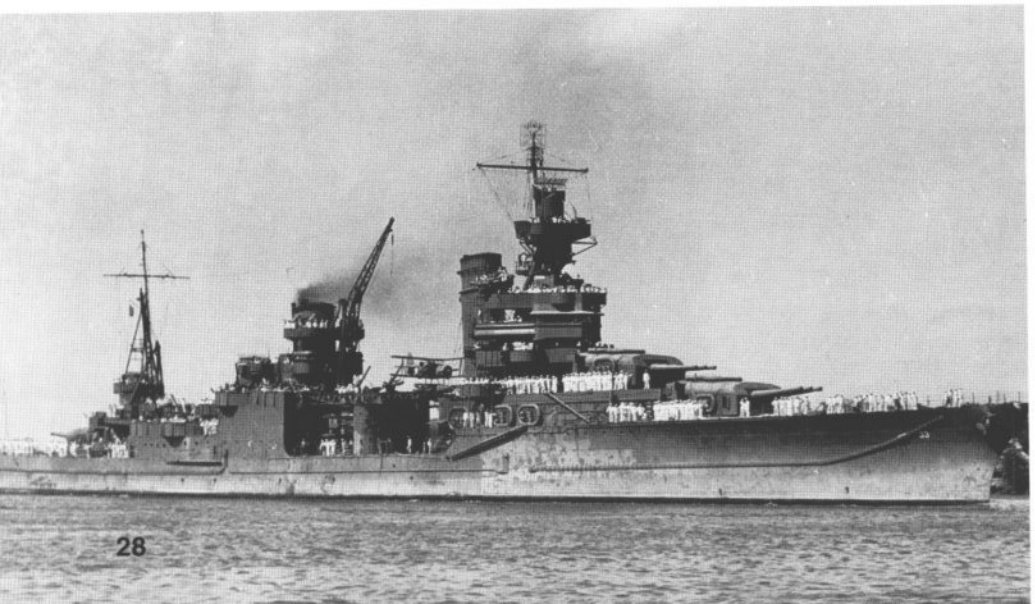
The PORTLAND (CA-33) flanks an OMAHA class light cruiser, which is leading flush deck destroyers in trail in the Atlantic on 31 May 1934. The PORTLAND was camouflaged in Measure 1, the Dark Gray (FS36163) System. Four Vought O3U-1 scout aircraft from VS-11S are embarked. The PORTLAND class cruisers measured 610 feet, 3 inches (186 M) in length and displaced 9800 tons (8890.6 MT) standard. (Real War Photos)

Four O3U-1s from VS-10S fly over the PORTLAND in 1935, while a fifth Corsair is spotted on her starboard catapult. The PORTLAND was commissioned on 23 February 1933 and immediately entered service with the Atlantic Fleet. The PORTLAND class was armed with nine 8-inch (20.3 CM)/55 caliber guns with a range of 31,700 yards (28,986.5 M) at 40° of elevation. The secondary armament consisted of eight 5-inch (12.7 CM)/25 dual-purpose guns for use against surface or air targets. (Real War Photos)



The PORTLAND leads an OMAHA class light cruiser at 27 knots (50 KMH) in a strong cross-sea on 17 January 1938. The PORTLAND assisted in the search and rescue of the airship AKRON (ZRS-4), which went down in the Atlantic on 4 April 1933. Following this rescue operation, the PORTLAND went on an extended goodwill tour. She was escorting the carrier LEXINGTON (CV-2) to Midway when the Pacific war began on 7 December 1941. (Real War Photos)

The PORTLAND enters Pearl Harbor, Hawaii on 14 June 1942, following the Battle of Midway. She escorted the ill-fated carrier YORKTOWN (CV-5) during the battle. The sailors are preparing to 'man the rails' following an old navy tradition. A single VCS-4 SOC was mounted on the starboard catapult. The PORTLAND was camouflaged in Measure 21, the Navy Blue (FS35044) System. The cables along the hull-side were for the degaussing system designed to neutralize the threat of magnetic mines. (Real War Photos)



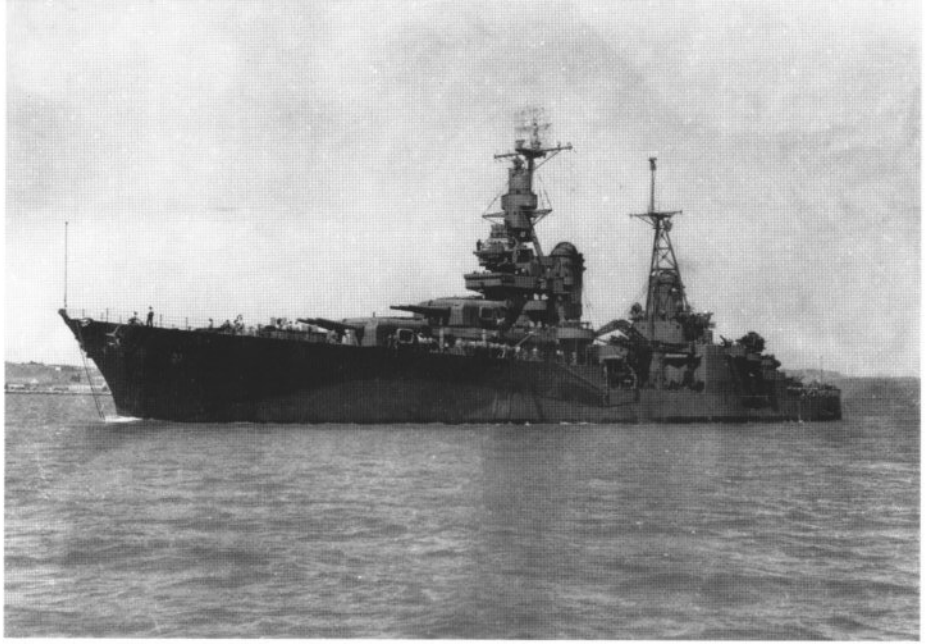
After the US entered World War II, six quad-mounted 1.1-inch (28MM) machine cannons were added to strengthen the PORTLAND class' anti-aircraft defenses. When the 1.1-inch weapons proved inadequate, the 40MM Bofors and the 20MM Oerlikon cannons were fitted when these became available. At war's end, the PORTLANDs were armed with six quad 40MM guns, four twin 40MM weapons, and 16 20MM cannons.

The PORTLAND was built by Bethlehem Steel in Quincy, Massachusetts and launched on 21 May 1932. She was commissioned on 23 February 1933 following her trials in the Atlantic off Maine. The INDIANAPOLIS (CA-35) was laid down at New York Shipbuilding in Camden, New Jersey on 31 March 1930. Following a construction process that took over one and a half years, this cruiser was launched on 7 November 1931. Her commissioning took place on 15 November 1932 after trials were conducted. The INDIANAPOLIS assumed the duties of Flagship of the Scouting Force, US Fleet from 1 November 1933. She went on to serve as the Flagship of the 5th Fleet in the Pacific during World War II.

The PORTLAND class heavy cruisers were fitted with two pedestal mounted catapults on the main deck between the forecastle and the aircraft hanger. A single aircraft-handling crane was mounted amidships atop the hangar area. This crane could be lowered between the catapults for clearance and to reduce top weight. The PORTLAND was provided with four scout aircraft, while the INDIANAPOLIS carried five aircraft since she also carried the Cruiser Scouting Force commander's aircraft. The aircraft embarked ranged from the Vought O2U/O3U series in the early 1930s to the Curtiss SOC, Vought OS2U, and Curtiss SC scouts just before and during the war years.

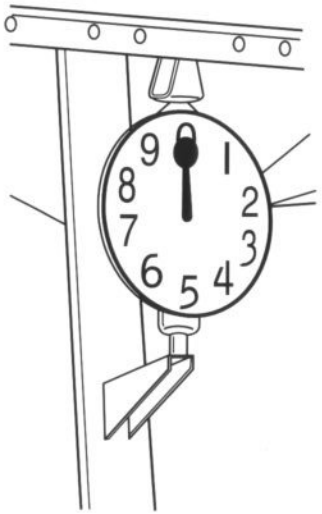
The PORTLAND earned 16 Battle Stars for her actions, while the INDIANAPOLIS earned ten Battle Stars; these Battle Stars were all awarded for service in the Pacific. The PORTLAND performed quite well against the Japanese during the Pacific conflict and was able to best the Japanese battleship HIEI during the Battle of Guadalcanal in November of 1942. The INDIANAPOLIS served in the Alaskan Campaigns and in the Gilbert-Solomons and Okinawa Invasions. During the Okinawa action, she was hit by a *kamikaze* (suicide aircraft) and forced to sail to San Francisco for repairs. Following her repairs and refit, the INDIANAPOLIS was loaded with a cargo that would change the outcome of the Pacific War – the components for the atomic bombs that were to be dropped on Hiroshima on 6 August 1945 and on Nagasaki three days later.

The PORTLAND survived the war and was placed in the Naval Reserve Fleet until she was sold for scrap on 6 October 1959; however, the INDIANAPOLIS suffered an entirely different fate than her sister. Following her delivery of the atomic bomb components to Tinian Island in the Marianas, the INDIANAPOLIS was ordered to sail to a training assignment in the Philippines before supporting fleet operations in the Okinawa area. Although the route was not in the mainstream of any present actions, Captain Charles McVay – skipper of the INDIANAPOLIS – requested an escort of destroyers. His request was denied and he sailed nonetheless and placed his ship, unknowingly, in harm's way. At 0014 hours on 30 July 1945, the Japanese submarine I-58 – commanded by Lt Cdr Mochitsura Hashimoto – spotted the INDIANAPOLIS and fired a spread of six torpedoes. Two of these torpedoes found their mark and the proud ship sank in ten minutes. Thrown into the sea, the approximately 800 surviving officers and sailors were at the mercy of the elements. Her radio room was unable to broadcast a position or a distress signal and the INDIANAPOLIS was not missed. On 2 August 1945, a Lockheed PV-1 Ventura spotted the survivors and sent a team of rescue ships and aircraft. Only 316 men were rescued from the original company of 1199 officers and men. The sinking of the INDIANAPOLIS was the last major loss of an Allied warship during World War II.

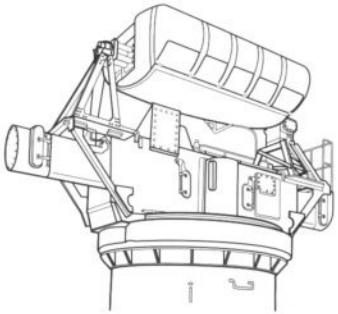


The PORTLAND was camouflaged in Measure 21, the Navy Blue System, in 1943. The ship – including the deck – was painted overall Navy Blue. Measure 21 proved to be the best defense against aerial attack, especially from the kamikaze. The SG sea-search antenna has been placed on a 20 foot (6.1 M) pole extension on the main mast. The SK air search and SG radars are placed on the foremast. The aircraft handling crane is lowered in the well deck between the two catapults. (Floating Drydock)

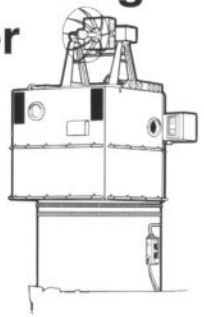
Range Concentration Dial



Mk 34 Director

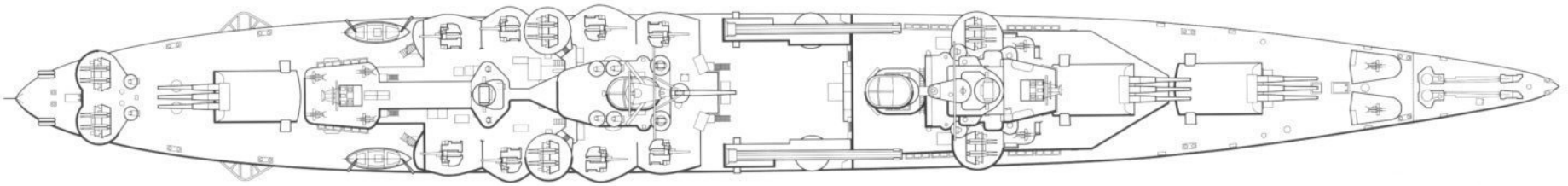


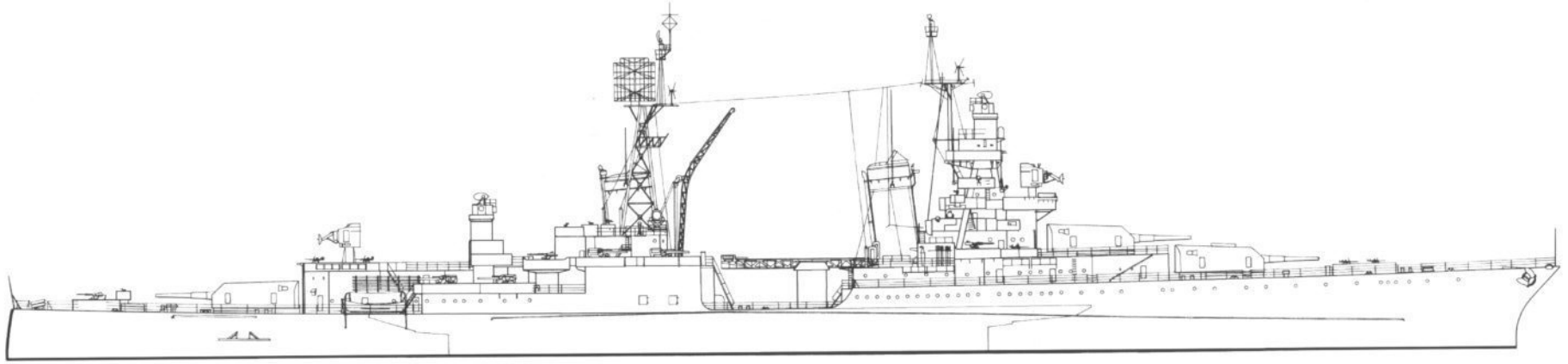
Mk 35 Range Finder



The PORTLAND was painted in Measure 33/7D camouflage in 1944, during one of her yard refits. This camouflage scheme had originally been drawn for a destroyer, but was adapted to a cruiser. SG radars were fitted atop both the main and foremasts, with an SK radar placed on the foremast. Her anti-aircraft suite was increased with the addition of single 20MM and quad 40MM mounts. (Real War Photo)

The PORTLAND displays the starboard Measure 33/7D pattern as she leaves port in 1944. The colors – Light Gray, Ocean Gray, and Dull Black – were applied in a different pattern than on the ship's port side. Lines for the paravanes – used to cut mine cables and bring mines to the surface – ran from the bow to the water. Mark 34 radar controlled gun directors were added atop the foremast and on a high foundation for the Number Three 8-inch gun mount. The clipper style bow was a trademark of the 'Treaty' cruisers. (Floating Drydock)





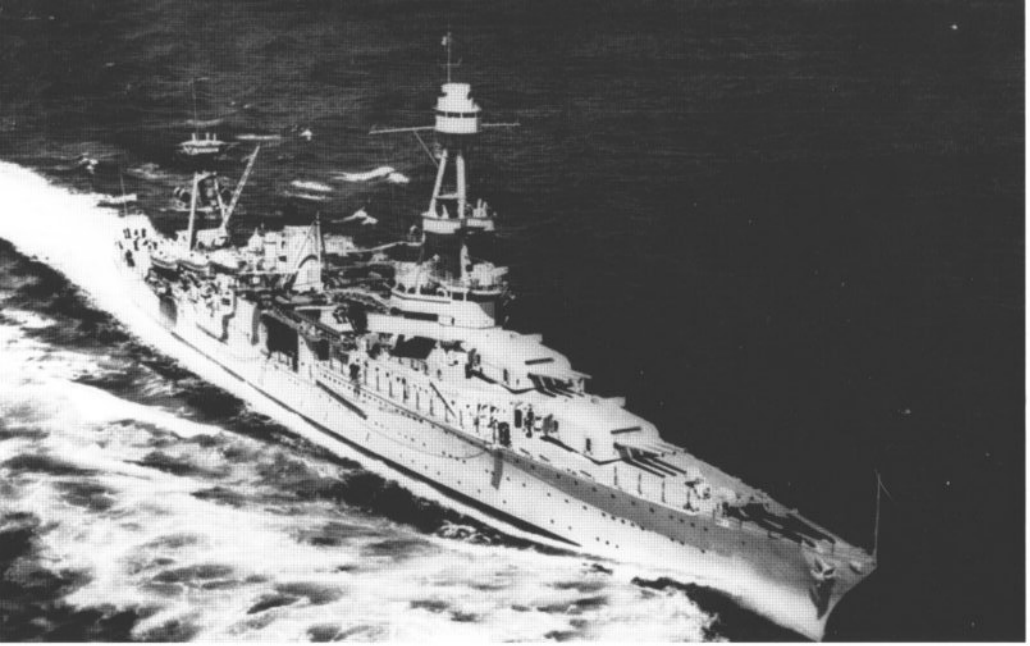
USS INDIANAPOLIS (CA-35) Specifications

Length:	610 Feet 3 Inches (186 M)
Beam:	66 Feet 1 Inch (20.1 M)
Draft:	24 Feet (7.3 M)
Displacement:	9800 Tons (8890.6 MT) Standard, 11,574 Tons (10,499.9 MT) Full Load
Propulsion:	107,000 HP/Four Screws
Speed:	33 Knots (61.2 KMH)
Compliment:	1401 (101 Officers, 1300 Enlisted)
Armament:	9 x 8-Inch (20.3 CM)/55 Guns in Triple Turrets, 8 x 5-Inch (12.7 CM)/25 Guns in Single Mounts, 24 x 40MM Bofors Cannon in Quad Mounts, 8 x 40mm Bofors Cannon in Twin Mounts, 16 x 20MM Oerlikon Cannon in Twin Mounts
Aircraft:	2-4 x SOC, OS2U, or SC Floatplanes

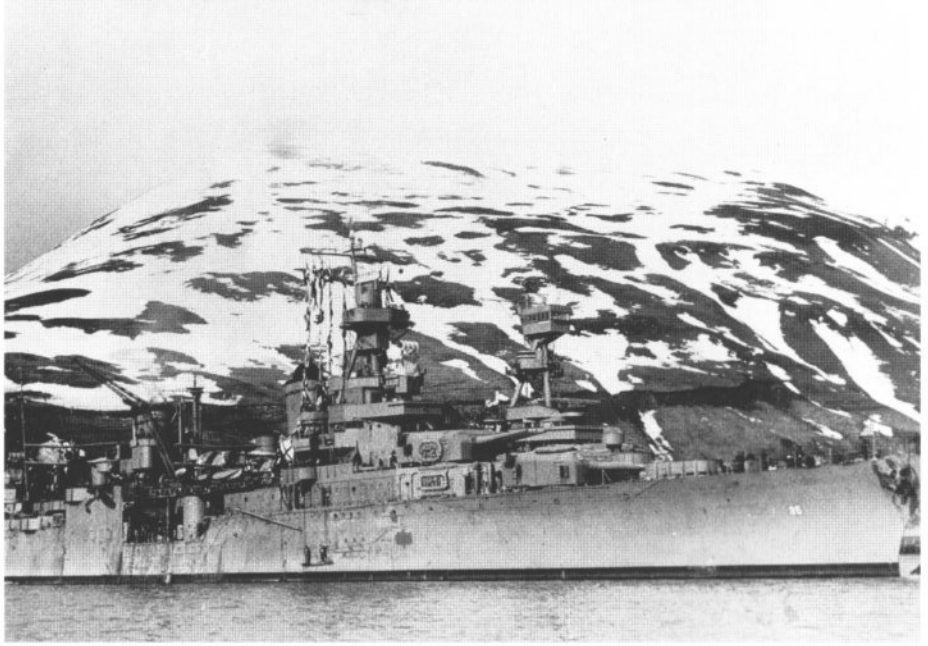
The PORTLAND was camouflaged in Measure 22, the Graded System, in 1945. This Haze Gray (5-H, FS35237) and Navy Blue (5-N, FS35044) system was designed to make the ship appear farther from the observer than she actually was. A single SOC scout aircraft from VCS-4 sits on the well deck's starboard catapult. One of the PORTLAND's boats is swung out on its davits along the starboard side. (Real War Photos)

Shore leave is in progress for the crew of the INDIANAPOLIS (CA-35), anchored in the Atlantic in 1934. Canvas awnings are deployed to provide some shade for the crew. She was painted in the 'peacetime' Light Gray (FS36320). The boat crane will soon begin launching the ship's boats, while the captain's 'gig' is already moving toward the shore. (Real War Photos)

The PORTLAND received single 20MM Oerlikon cannon mounts in the forecastle area ahead of her Number One turret during a refit in March of 1944. The Number Two turret was turned to starboard for some repairs. During this refit, the PORTLAND was repainted in Measure 33/7D, a camouflage scheme consisting of Dull Black (FS37040), Light Gray (FS36320), and Ocean Gray (FS35164). (Floating Drydock)



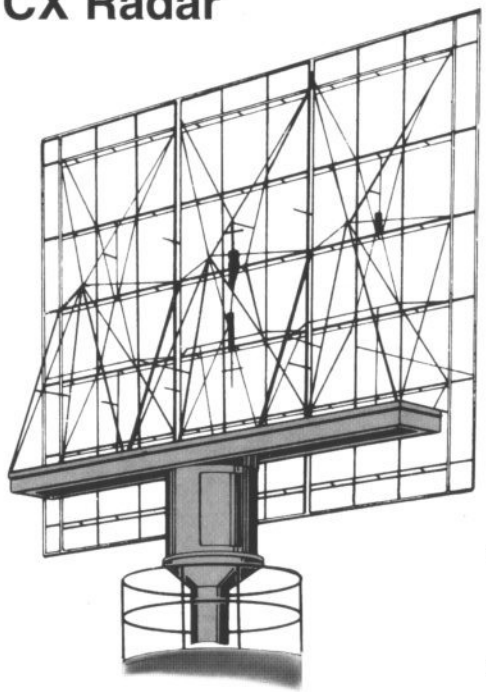
The INDIANAPOLIS exercises with part of the Pacific Fleet in 1937. The cruiser is painted in 'peacetime' Light Gray, which would eventually become similar to Measure 3, the Light Gray system. Four new Curtiss SOC-1 Seagulls from VCS-6 were positioned on the two catapults in the INDIANAPOLIS' well deck. The Mark 18 Gun Director for her 8-inch main guns was positioned atop the foremast. (Floating Drydock)



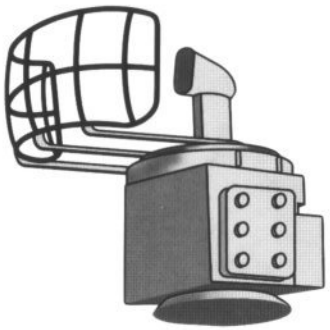
The INDIANAPOLIS is moored next to an OMAHA class light cruiser in Dutch Harbor, Alaska in March of 1943. An SOC from VCS-4 hangs from the aircraft handling crane while two other aircraft are placed on the starboard and port catapults. Two crewmen are performing the age old chore of scraping and painting over rust. (Real War Photos)

The INDIANAPOLIS trains her guns to starboard off the Aleutian Islands in November of 1943. She was camouflaged in Measure 21, the Navy Blue (FS35044) System. Two SOC scout aircraft from VCS-4 are positioned for launch on her two catapults. An FC fire control radar is atop the foremast and on a tower on the aft superstructure abaft the Number Two funnel. The SK air search radar was situated on the main mast. (Real War Photos)

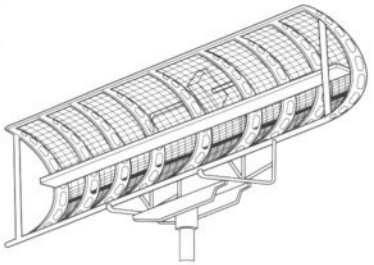
CX Radar



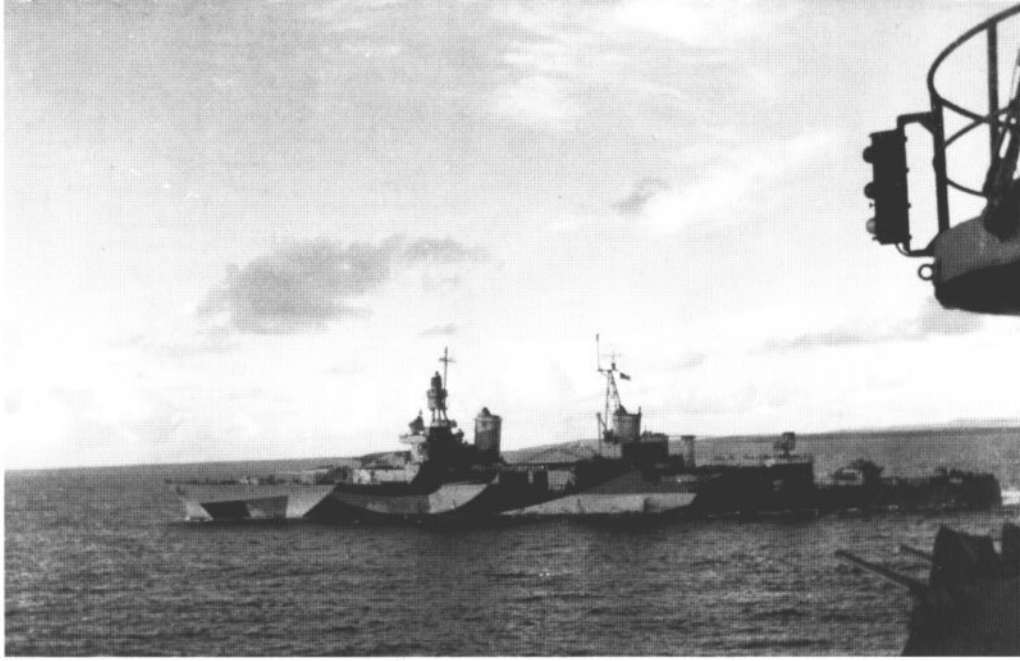
SG Radar Variant



FC Fire Control

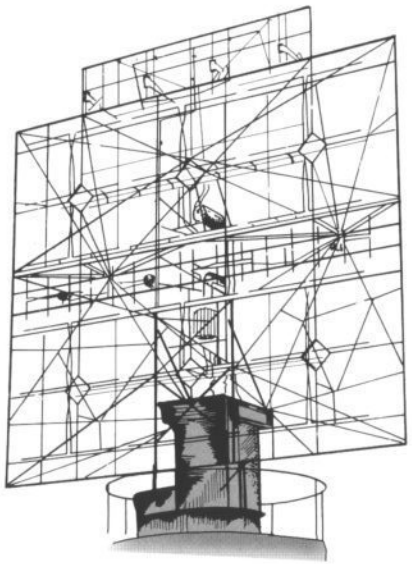


The INDIANAPOLIS prepares to fire her 8-inch guns at Kiska Island in the Aleutians in 1943. She was camouflaged in Measure 21, the Navy Blue System. A twin 40MM Bofors mount was added to the Number Three turret for additional anti-aircraft protection. Single 20MM Oerlikon guns have been added to the aft superstructure bandstand between the two fire control radar antennas. (Real War Photos)

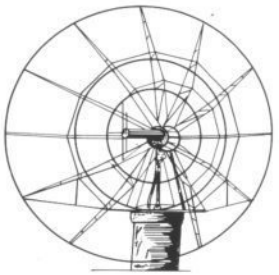


The INDIANAPOLIS sails beside the light cruiser BIRMINGHAM (CL-62) off Saipan during the invasion in June of 1944. The Measure 32/7D scheme was effective in breaking up the ship's outline. Following actions off the Caroline Islands, the INDIANAPOLIS was sent back to the States for a much needed overhaul and a change of camouflage schemes. (Real War Photos)

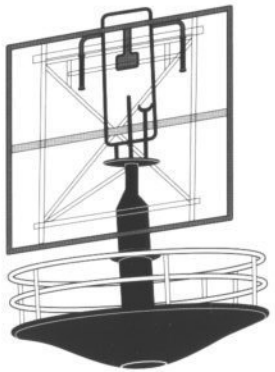
SK Radar



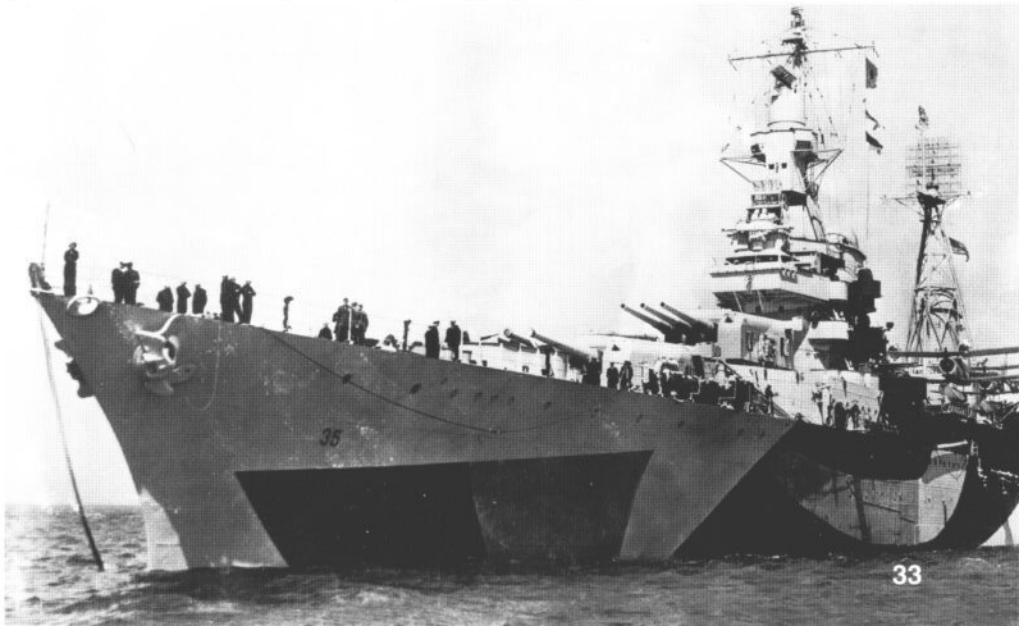
SK-2 Radar



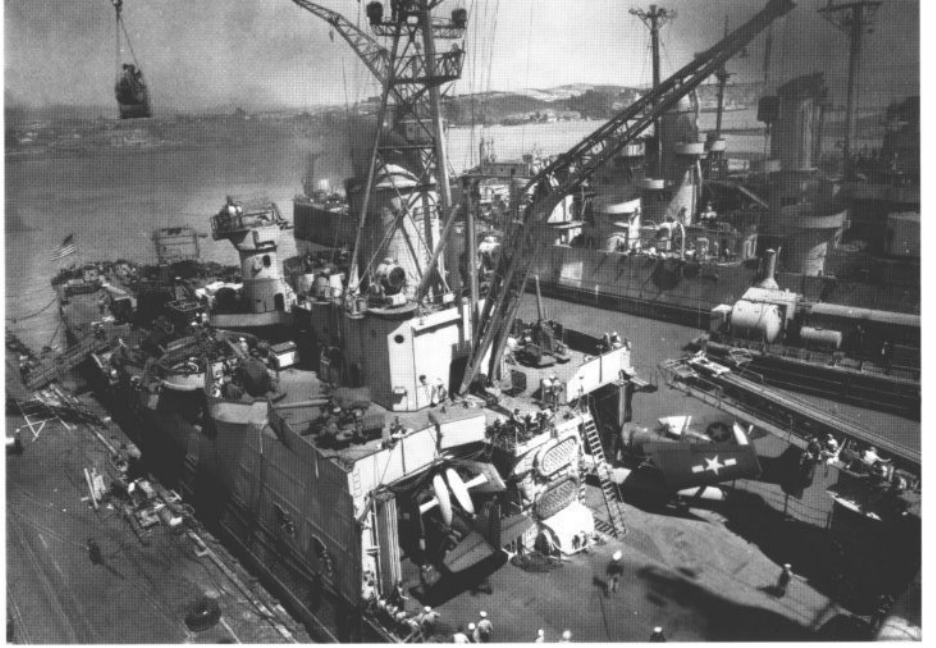
SC-1 Radar



The INDIANAPOLIS was camouflaged in Measure 32/7D – a scheme similar to the dazzle scheme carried by her sister the PORTLAND – on 1 May 1944. Her FC fire-control radar was placed atop the bridge roof tower and the SG sea search radar was atop the foremast, with SK and SG radars on the main mast. Her scout aircraft were assembled on the catapults and braced for stormy weather. (Floating Drydock)

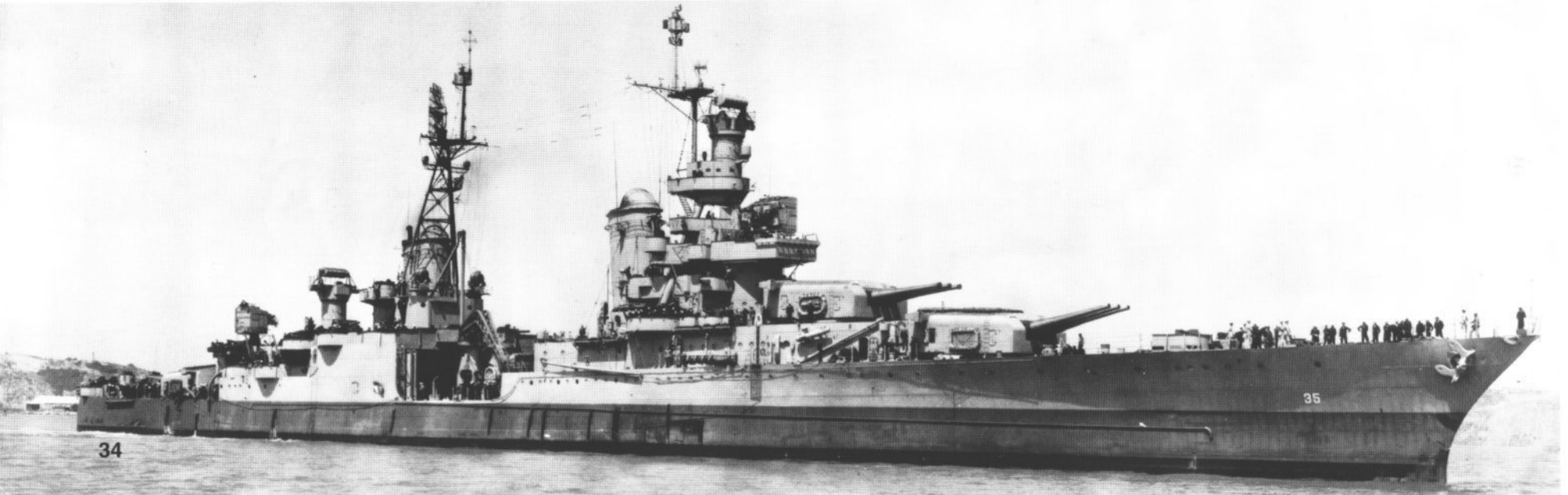


(Above) In late 1944, the INDIANAPOLIS underwent a refit at Mare Island, California and was camouflaged in Measure 22, the Graded System. The refit included the addition of two Mark 34 radar controlled gun directors for the main gun battery. The INDIANAPOLIS was wearing this Measure when she was sunk by the Japanese submarine I-58 on 30 July 1945. (Floating Drydock)



(Below) The INDIANAPOLIS leaves Mare Island on 12 July 1945, with the major components of the Hiroshima atomic bomb in her aircraft hangar, under close US Marine guard. She ironically carries a HF/DF (High Frequency/Direction Finding) antenna used to detect Japanese submarine radio transmissions atop her main mast. Her starboard catapult has been removed to help lessen some top weight of the additional radar and directors. She made the 5000 mile (8046.5 KM) crossing from the US to Tinian in the record time of ten days. (Floating Drydock)

(Above) The INDIANAPOLIS received her final refit at Mare Island during the summer of 1945. Her two new Curtiss SC-1 Seahawk scout aircraft were being moved into the hangars. Splinter protection guards were placed at the 5-inch gun positions. A stripped CLEVELAND Class cruiser (probably the BIRMINGHAM, CL-62) is beside the INDIANAPOLIS. The INDIANAPOLIS soon departed for Tinian in the Marianas to deliver the atomic bomb destined to be dropped on Hiroshima, Japan.



NEW ORLEANS Class

The NEW ORLEANS class represented the last class of the second generation 'Treaty' heavy cruisers built between the two World Wars. The ASTORIA (CA-34) was the first to be laid down on 1 September 1930, while the VINCENNES (CA-44) was the last to be launched with the breaking of the champagne bottle ceremony on 21 May 1936. The NEW ORLEANS class was, at times, referred to as the ASTORIA class since she was laid down before the NEW ORLEANS. When the ASTORIA was lost in 1942, the class officially became the NEW ORLEANS. All of the heavy cruisers in the class were outwardly similar, but their displacement among these ships varied by some 600 tons (544.3 MT).

The NEW ORLEANS class cruisers were 588 feet (179.2 M) in overall length and 578 feet (176.2 M) at the waterline. Their beam was 61 feet, 9 inches (18.8 M) and their draft was 23 feet, 6 inches (7.2 M) at full war load. Displacement was rated at 9950 tons (9026.6 MT) standard and 11,515 full load (10,446.4 MT) in peacetime. Their wartime displacement grew to 10,136 tons (9195.4 MT) standard and 12,436 tons (11,281.9 MT) at full war load. The displacement increased year by year due to the addition of radar, electronic equipment, and anti-aircraft protection.

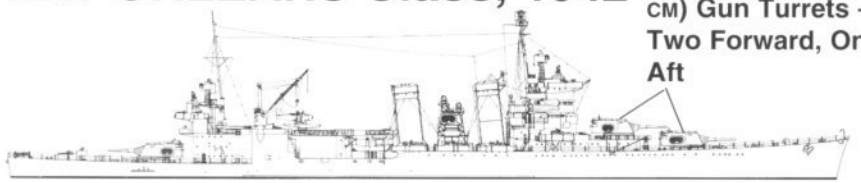
Armor protection was increased on the NEW ORLEANS class over earlier 'Treaty' cruisers, with up to five inches (12.7 CM) on the hull beltline that protected the machinery and internal spaces. Magazine bulkheads were given 1.5 inches (3.8 CM) and the machinery bulkheads received 3.5 inches (8.9 CM). The turrets were faced with eight inches (20.3 CM), 2.75 inches (7 CM) on the sides, and 1 inch (2.5 CM) on the roof. The turret barbettes were protected with five inches of armor on all ships except the SAN FRANCISCO (CA-38), whose barbettes were fitted with 6.5 inches (16.5 CM) of armor.

The NEW ORLEANS class was powered by eight Babcock and Wilcox high-pressure steam boilers that produced 107,000 horsepower for the four Westinghouse geared steam turbines. The turbines were shafted to four screws, giving this class a rated speed of 33 knots (61.2 KMH). The cruisers' range – using 3269 tons (2965.6 MT) of bunker oil – was approximately 14,000 nautical miles (25,943.9 KM) at 10 knots (18.5 KMH) or 5280 nautical miles (9784.5 KM) at 20 knots (37.1 KMH). Their range could be extended by refueling from a tanker or another ship fitted to transfer oil while underway.

The main armament on the class centered around nine 8-inch (20.3 CM)/55 caliber Mark 14 guns, mounted in triple turrets. The NEW ORLEANS was fitted with Mark 14 Mod 0 guns, the MINNEAPOLIS received the Mark 15, Mod 1 weapons, and the remaining ships – the ASTORIA, TUSCALOOSA, SAN FRANCISCO, QUINCY, and VINCENNES – were armed with Mark 12, Mod 0 guns. The turret face configurations were also different with the Mark 14 guns being housed in rounded face turrets and the Mark 12 and Mark 15 guns in flat-faced turrets. The 8-inch guns had a range of 31,700 yards (28,986.5 M) – approximately 18 miles (29 KM) – with a muzzle velocity of 2800 feet (853.4 M) per second. The armor piercing round weighed 260 pounds (117.9 KG) and could penetrate five inches (12.7 CM) of armor plating at 10,000 yards (9144 M).

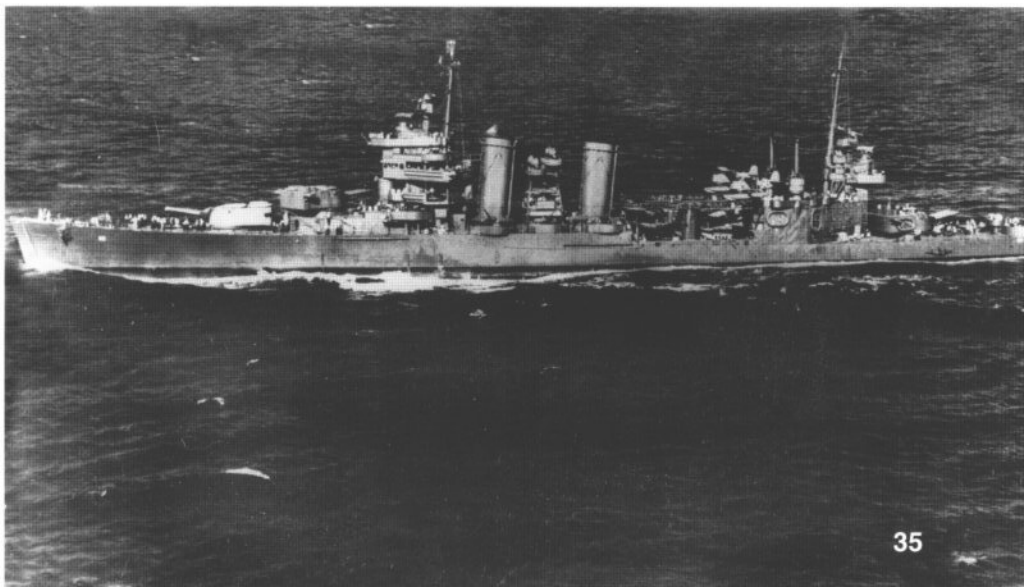
NEW ORLEANS Class, 1942

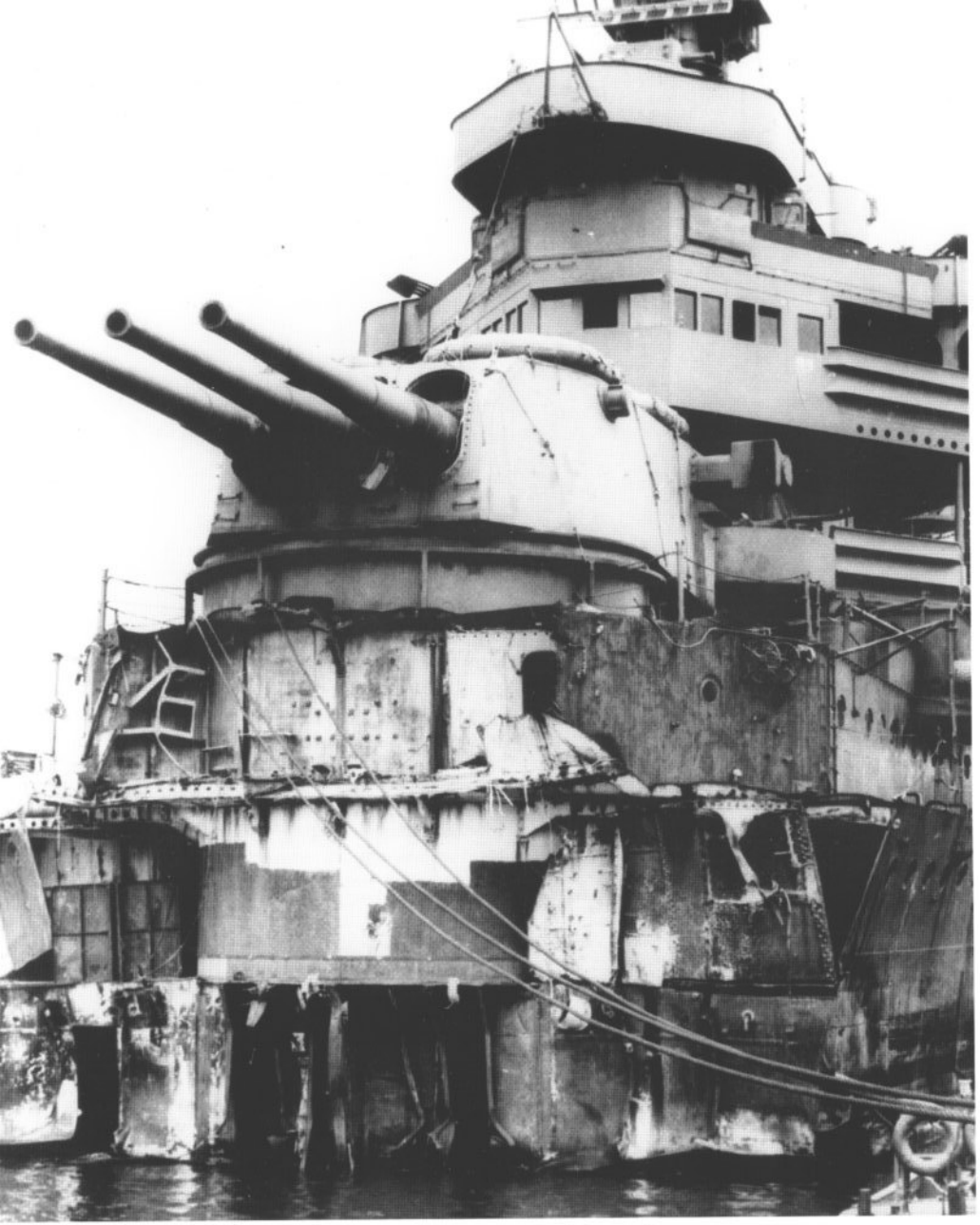
Triple 8-Inch (20.3 CM) Gun Turrets – Two Forward, One Aft



The NEW ORLEANS (CA-32), wearing Measure 21 (overall Navy Blue, FS35044), stands out of Pearl Harbor, Hawaii in May of 1942. She earned 16 Battle Stars for her actions in the Pacific during World War II, fighting from Pearl Harbor to Okinawa. The NEW ORLEANS was named for the 'Crescent City,' the largest city in Louisiana, and the terminus of the Mississippi River system. (Real War Photos)

The NEW ORLEANS cruises in the Pacific during 1942, while her Number Two 8-inch (20.3 CM) turret rotated against the stops. Her SOC scouts from VCS-6 were positioned on her twin catapults. The NEW ORLEANS class was armed with nine 8-inch/55 caliber guns, with eight 5-inch (12.7 CM)/25 dual-purpose guns for her secondary armament. The NEW ORLEANS was built by the New York Navy Yard and was launched on 12 April 1933. (Floating Drydock)





The NEW ORLEANS lost 120 feet (36.6 M) of her bow section – up to the Number Two turret – to a Japanese torpedo during the Battle of Tassafaronga. This engagement occurred during the night of 30 November-1 December 1942. All of the bow section crew lost their lives when this section separated from the rest of the ship. The thin side plating of the NEW ORLEANS' hull shows that her class had less hull armor than later US heavy cruisers. (Floating Drydock)

Secondary armament for the NEW ORLEANS class consisted of eight 5 inch (12.7 CM)/25 caliber dual-purpose guns, which could be used against surface or aerial targets. In the mid 1930s, .50 caliber (12.7MM) water-cooled machine guns were added to augment the 5-inch guns. When the Second World War began, additional anti-aircraft armament was added in the form of the 1.1-inch (28MM) quad machine cannon mount. This weapon proved ineffective and was soon replaced by 20MM and 40MM anti-aircraft guns once these became available. By war's end, the four surviving NEW ORLEANS class heavy cruisers were fitted with six 40MM Bofors quad-mount guns and numerous 20MM Oerlikon weapons.

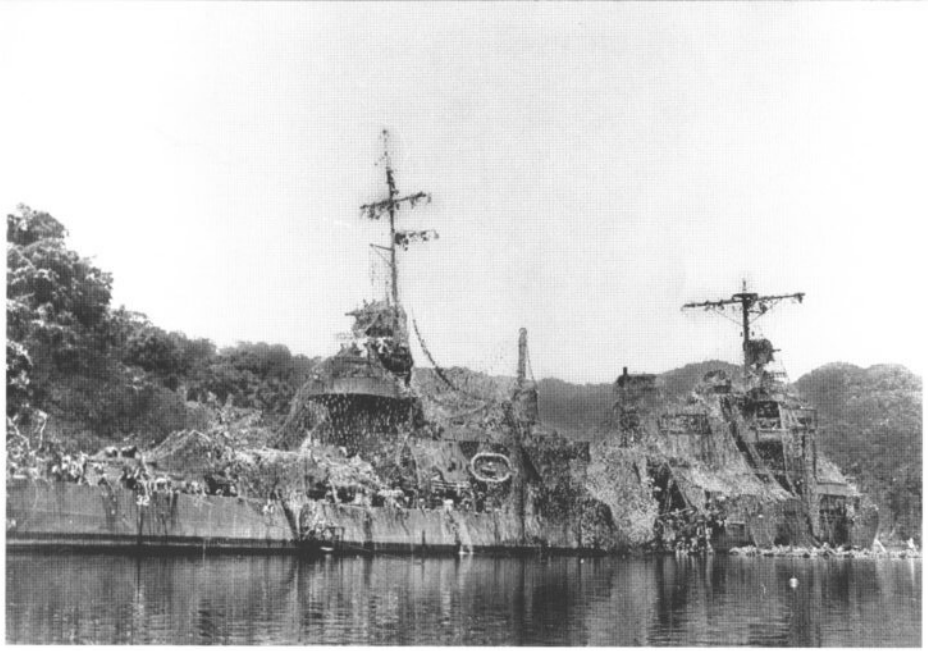
The optically sighted Mark 31 director guided the 8-inch guns, while the 5-inch and 40MM guns were aimed with the Mark 33 director. Both the 5-inch and 40MM weapons were later directed by the Mark 51 with the electric Mark 14 gunsight. The Mark 31 directors were mounted on the roof of the conning tower and atop the aft superstructure.

FC fire control radar was added to supplement the optical Mark 31 directors when the radar became available. The large amount of added electronic and radar equipment put a strain on the cruisers' onboard generating equipment and it became necessary to augment the ships' generators with two 600 kilowatt diesel generators to handle the additional load. The diesel generators also acted as a back up power source for the standard onboard equipment.

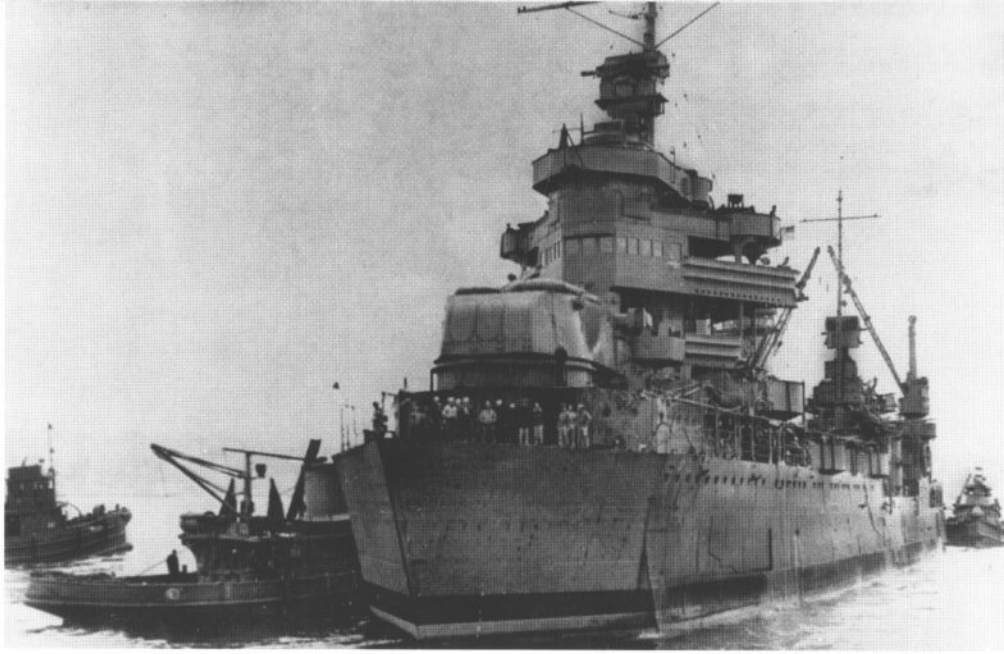
There were six builders of the NEW ORLEANS class cruisers. The NEW ORLEANS (CA-32) was laid down by New York Navy Yard, New York on 14 March 1931. The ASTORIA (CA-34), ordered 12 July 1929 (the same day as the NEW ORLEANS), was laid down at Puget Sound Navy Yard in Bremerton, Washington on 1 September 1930, with launching taking place on 16 December 1933. The MINNEAPOLIS was also ordered on 12 July 1929 and was laid down at the Philadelphia Navy Yard on 27 July 1931. Following two years of construction, she was launched into the Delaware River on 6 September 1933. The TUSCALOOSA (CA-37) was laid down by the New York Shipbuilding Company in Camden, New Jersey on 3 September 1931 and launched on 15 November 1933. The SAN FRANCISCO (CA-38) – the most highly decorated US Navy cruiser – was laid down at the Mare Island Navy Yard in Vallejo, California on 9 September 1931 and launched on 9 March 1933. Both the QUINCY and the VINCENNES were built by Bethlehem Steel in Quincy, Massachusetts. The keel of the QUINCY was laid down on 15 November 1933 she was launched on 19 June 1935. The VINCENNES – last of the 'treaty' cruisers – was laid down on 2 January 1934 and launched on 21 May 1936.

The ASTORIA, the QUINCY, and the VINCENNES were lost during the Battle of Savo Island on 8/9 August 1942, when an Allied cruiser force was engaged by seven Japanese cruisers that were in the Guadalcanal area attempting to thwart the Allied landings. The night action that followed saw Japanese cruisers and destroyers launch swarms of 24-inch (61 CM) 'Long Lance' torpedoes at the Allied warships. These torpedoes hit and sank the three US cruisers and the Australian cruiser CANBERRA, while the CHICAGO lost part of her bow to a 'Long Lance.' No Japanese ships were lost during this battle; however, the heavy cruiser KAKO, departing the Savo Island battle area, was sunk by the US submarine S-44 (SS-155) on 10 August.

The seven NEW ORLEANS class heavy cruisers earned a total of 63 Battle Stars between them. These were all awarded for actions in the Pacific during the three-year fight against the Japanese. The SAN FRANCISCO was the second most highly decorated US ship (after the carrier ENTERPRISE, CV-6), with 17 Battle Stars and a Presidential Unit Citation for her flag. Except for her overhauls and refits, SAN FRANCISCO was in near constant action from 1942 until 1945. The MINNEAPOLIS also earned 17 Battle Stars during the war, while the NEW ORLEANS was just behind with 16 Stars. The TUSCALOOSA earned seven Battle Stars for her actions in the Atlantic and Pacific. The three sisters lost off of Savo Island in August of 1942 earned a total of six Battle Stars: the ASTORIA earned three Battle Stars, the VINCENNES received two, and the QUINCY earned one for her actions during this engagement.

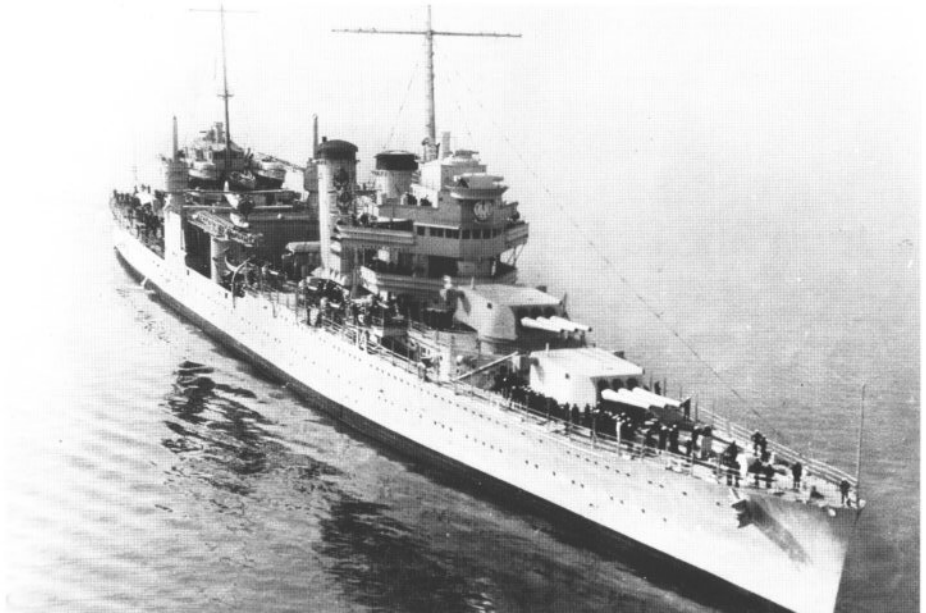


The NEW ORLEANS took refuge in Tulagi harbor after the Battle of Tassafaronga and was camouflaged to prevent Japanese reconnaissance aircraft from locating her and then trying to finish her off. The netting appeared to have little effect in disguising her outline. The NEW ORLEANS received a temporary coconut log bow for her journey to Australia, where a more substantial temporary bow was fitted. (Real War Photos)

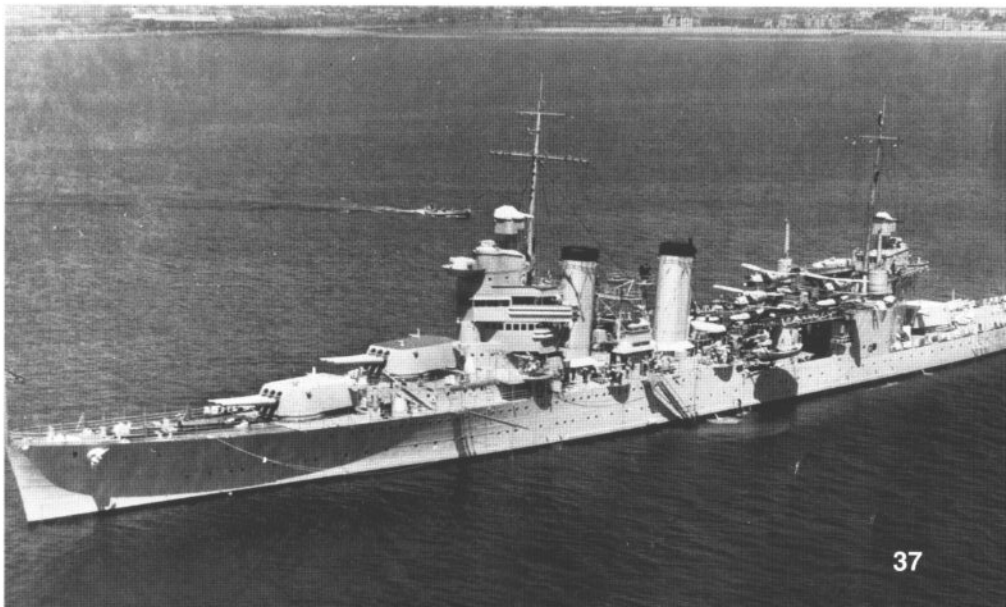


The NEW ORLEANS was fitted with a steel temporary bow in Australia before sailing for Bremerton, Washington for the installation of a permanent bow. The Number Two turret's three 8-inch guns were removed to reduce forward weight. Following an 11-month overhaul, the NEW ORLEANS rejoined the war with raids on Wake and the Gilbert Islands in October and November of 1943. (Real War Photos)

The ASTORIA (CA-34) was constructed by Puget Sound Navy Yard and was commissioned on 28 February 1934. Following trials and work up, she joined the US Fleet sailing out of San Pedro, California with Cruiser Division Seven. A Vought O2U-3 sat on the starboard side catapult ready for launching. The clock face above the bridge was a range concentration dial. (Real War Photos)



The ASTORIA, painted in 'peace time' Measure 3 Light Gray (FS36320), lies at anchor on 10 April 1935. Vought O3U-3s from Cruiser Division Seven's Aviation Unit are spotted on her catapults ready for flight. The sun's angle gives a shadow, which resembles a camouflage look about the bow area. The optical rangefinder for the Number One and Two 8-inch turrets was mounted in a shielded position atop the pilothouse. (Real War Photos)

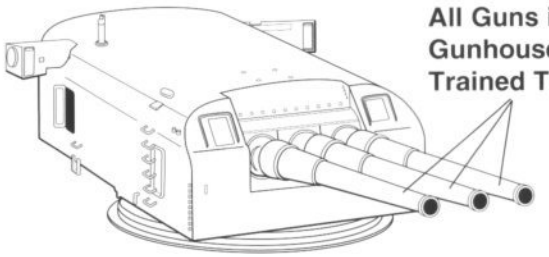


(Above) The ASTORIA bombards Japanese positions on the Gilbert Islands in early 1942. Her Curtiss SOC scout aircraft were in the air spotting for the main 8-inch guns. She acted as a screen for the carrier YORKTOWN (CV-5) during the Battle of the Coral Sea in May of 1942. The ASTORIA was sunk during the Battle of Savo Island on 8-9 August 1942. (Real War Photos)

(Below) The ASTORIA makes a sweeping turn to starboard on 8 July 1942. She was camouflaged in Measure 21, the Navy Blue System. The shielding for the optical rangefinder above the pilothouse was enlarged from her 1935 configuration. SOC scouts from VCS-6 were situated on the catapults. The waist 5-inch/25 dual-purpose guns were now shielded with thin armor to protect the gun crew from splinters and shrapnel. (Real War Photos)

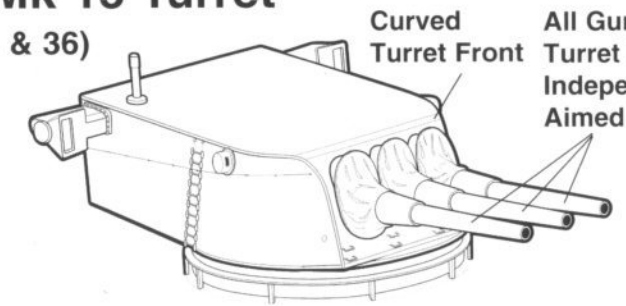
8-Inch (20.3 CM) Mk 14 Gunhouse

(CA-24 through 31, CA-33 & 35)



8-Inch Mk 15 Turret

(CA-32, 34, & 36)

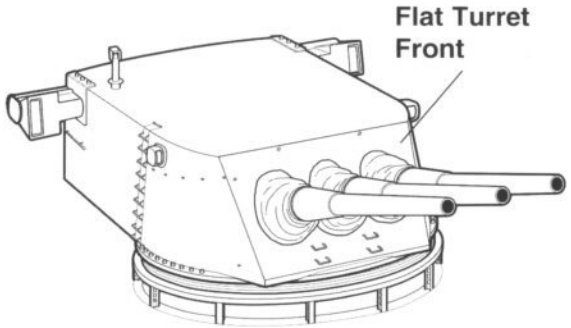


The MINNEAPOLIS (CA-36) sails in calm Pacific waters prior to World War II. She was constructed by the Philadelphia Navy Yard and soon joined the Cruiser Scouting Force as Flagship of Cruiser Division Six out of San Pedro, California. Her single rollup aircraft hangar door is open. The four waist mounted 5-inch/25 dual purpose guns were situated around the forward superstructure on the main deck and on deck level one. (Floating Drydock)

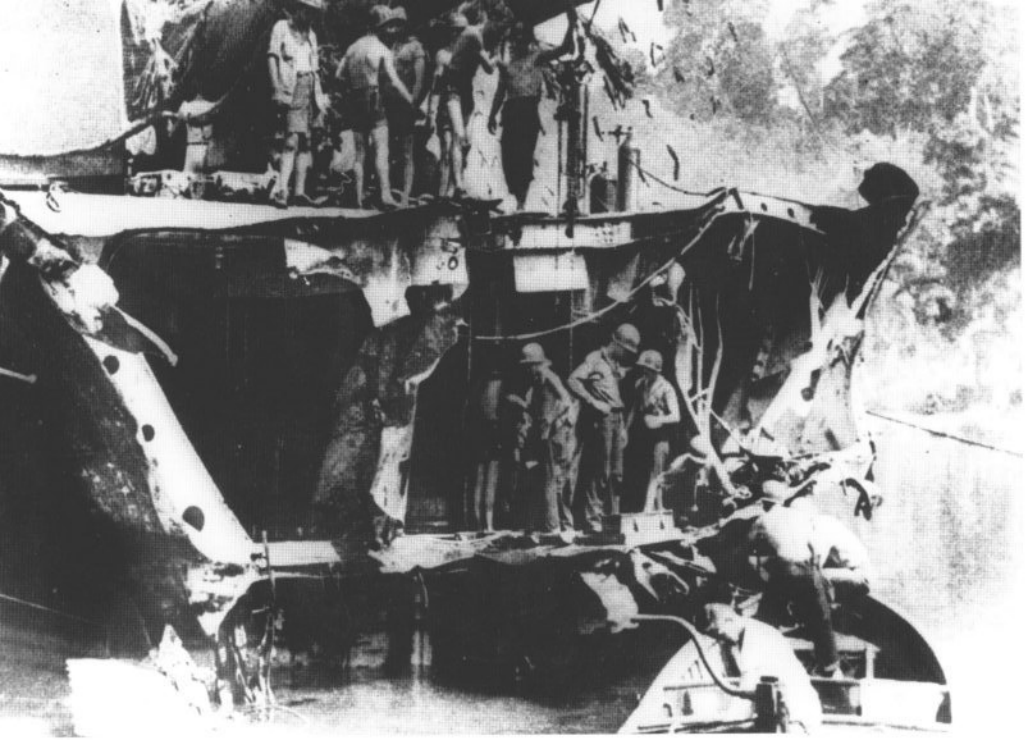
In 1940, the MINNEAPOLIS was camouflaged in Measure 3, the Light Gray 'peace time' paint scheme. Measure 3 was discarded when the war in the Pacific began on 7 December 1941. The MINNEAPOLIS was outside of Pearl Harbor when the Japanese attacked and joined forces with other cruisers in a vain search for the Japanese fleet. SOC scout aircraft are at the ready on the ship's two catapults. (Floating Drydock)

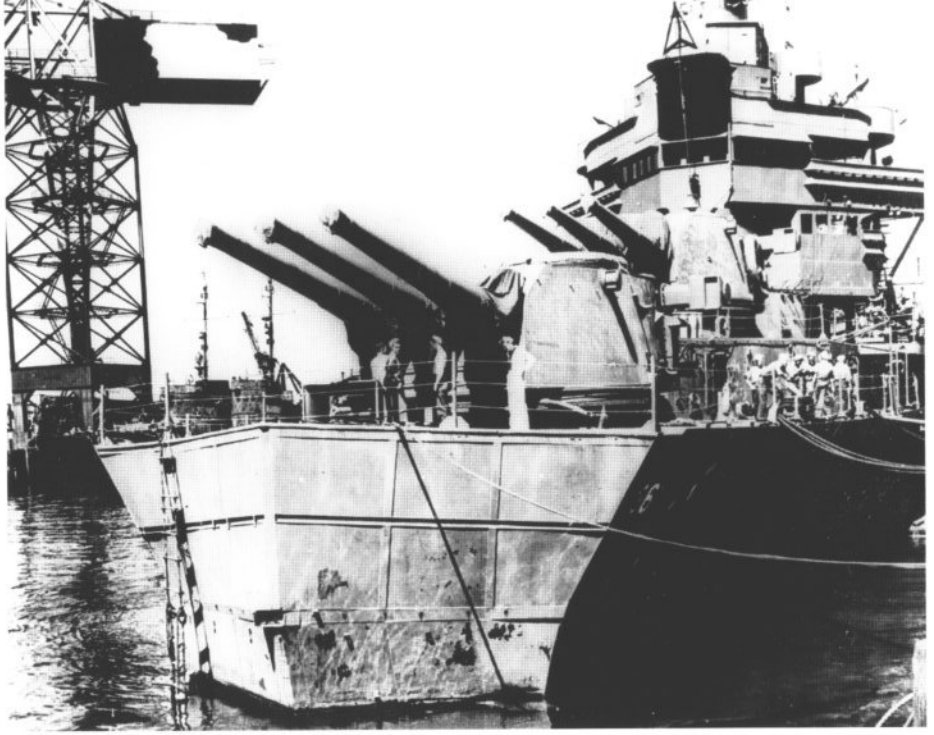
8-Inch Mk 12 Turret

(CA-37 through 39, & CA-44)



The MINNEAPOLIS stands out of Pearl Harbor in 1942. The cruiser was camouflaged in Measure 21, the Navy Blue System. She was finished in Measure 21 from 1942 until August of 1943. Small white pennant numbers appear on her bow and stern. These numbers provided the only identification of the ship, since the name on the stern was painted over when the war began. The MINNEAPOLIS earned 17 Battle Stars for her service in the Pacific during World War II. (Floating Drydock)





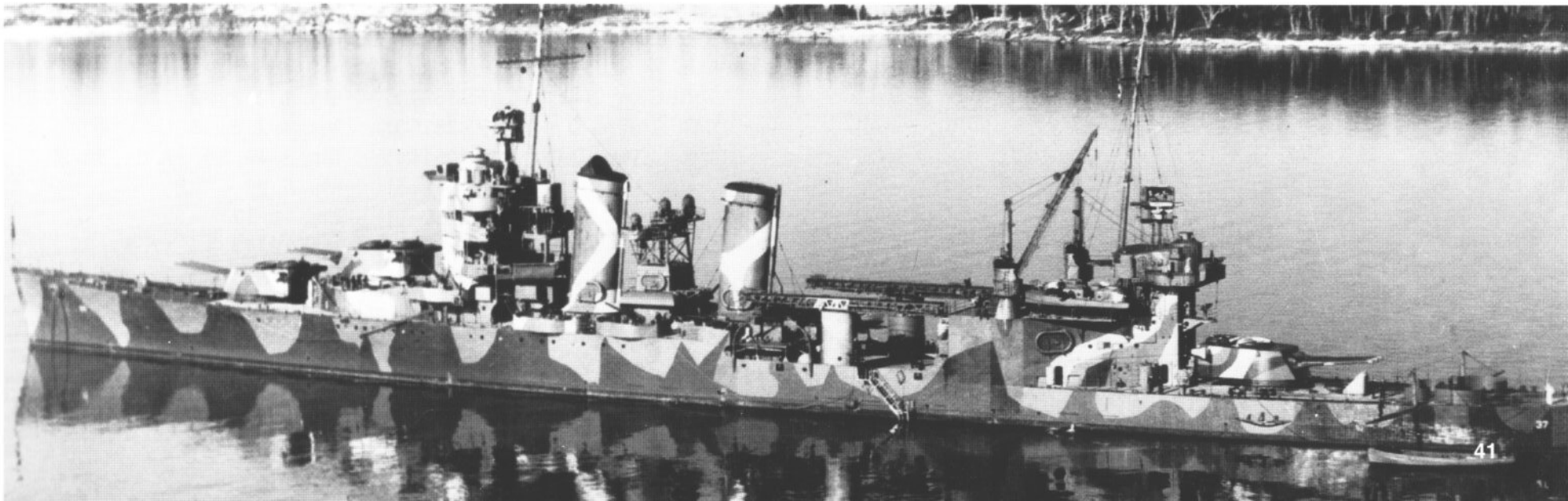
(Above Left) The MINNEAPOLIS lost her bow during the Battle of Tassafaronga on the night of 30 November-1 December 1942. The NEW ORLEANS also lost her bow during the same engagement. The MINNEAPOLIS, like the NEW ORLEANS, was fitted with a temporary bow before sailing back to the United States by way of Espiritu Santo and Pearl Harbor. Her frames, bulkheads, and hull plating were constructed with thin metal in order to get under the 10,000 ton (9072 MT) limit. The various naval treaties the US government signed in 1921 and 1930 imposed this displacement limit. (Floating Drydock)

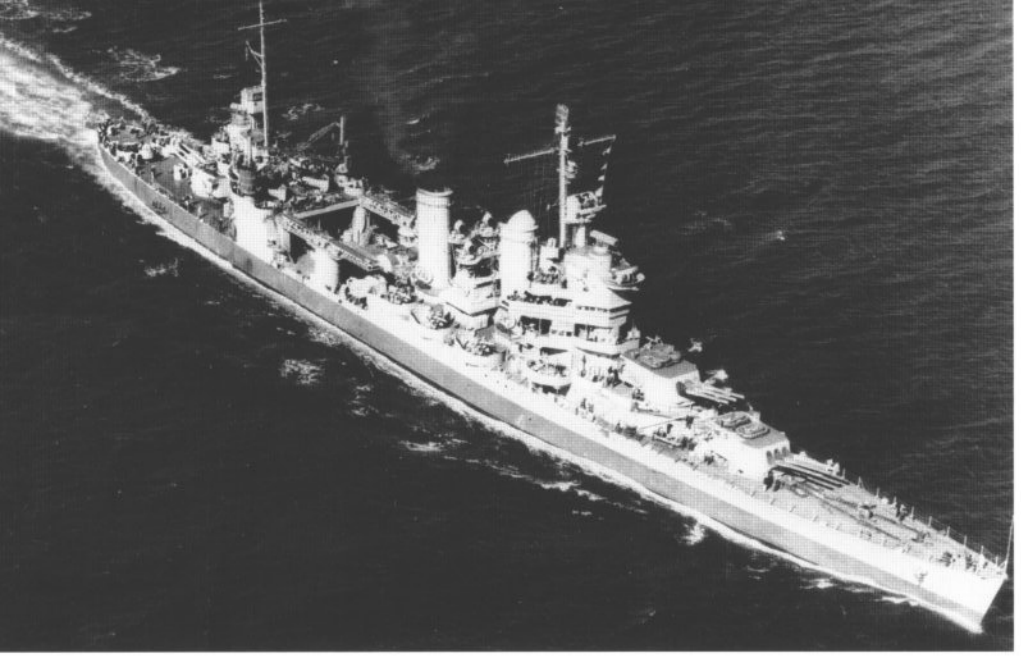
(Above) The MINNEAPOLIS was fitted with a temporary bow at Espiritu Santo in the New Hebrides for her journey back to the United States. This temporary bow is blunter than the one fitted to the NEW ORLEANS. Once repairs were completed at Mare Island Navy Yard in San Francisco, California, the MINNEAPOLIS returned to the Pacific War in August of 1943. (Floating Drydock)

(Left) While undergoing bow replacement and overhaul, the MINNEAPOLIS was painted in an experimental camouflage scheme in August of 1943. This scheme enabled the heavy cruiser to resemble a LIVERMORE (DD-429) Class destroyer. The scheme was reminiscent of Measures 7 and 8, where light cruisers were painted to resemble destroyers. The Haze Gray (FS35237) hull was painted with a Black (FS37040) cutout on the side below the forward superstructure, complete with a false life raft. (Real War Photos)

(Above) In June of 1945, the MINNEAPOLIS was repainted in Measure 22, the Graded System. This Measure offered little protection from aerial observers such as *kamikaze*. The port catapult and starboard aircraft handling crane were removed to lessen the top weight of added electronic gear and defensive armament. The main mast included SK-2 air search and SG surface search radars, while the foremast had SK air search and SG surface search radars. (Floating Drydock)

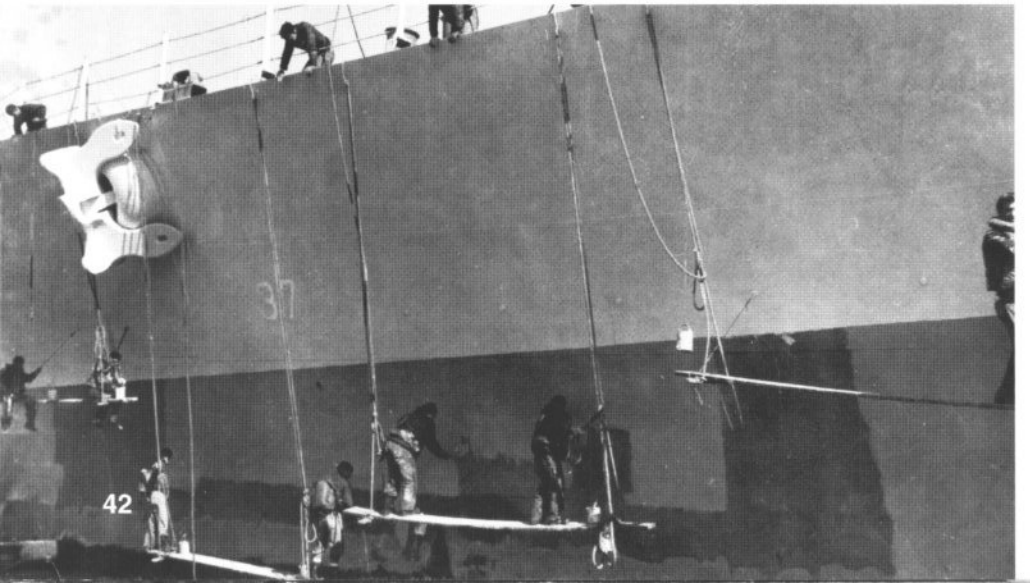
(Below) The TUSCALOOSA (CA-37) sits resplendent in a calm harbor awaiting orders to escort another convoy in the Atlantic in March of 1942. She was camouflaged in Measure 12 with splotches. Following convoy duty, the TUSCALOOSA was overhauled in the summer of 1942. She then joined the Allied naval forces for Operation TORCH, the invasion of French North Africa in November of 1942. (Real War Photos)

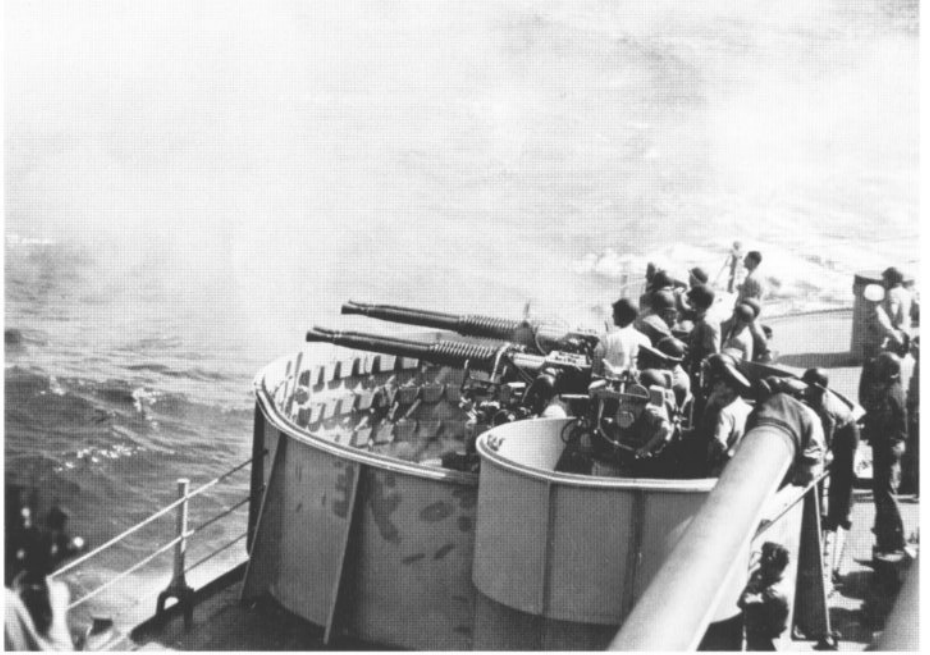




The TUSCALOOSA, now camouflaged in Measure 22, steams towards North Africa to engage the enemy in Operation TORCH in November of 1942. Shields were fitted to the 5-inch/25 dual-purpose guns to guard against shrapnel and flying splinters. The foremast was fitted with SK air search and SG sea search radars. The pilothouse roof was equipped with the FC fire control radar for the her 8-inch main armament. (Floating Drydock)

The TUSCALOOSA's Measure 22 camouflage paint scheme receives some attention from the 'rust gang' in June of 1943. The effects of salt in the ocean water caused the paint to deteriorate and required constant attention to keep it 'ship shape.' Repainted finishes on warships were done by handbrush, rather than by airbrush at the builder's yard. The TUSCALOOSA would wear the Measure 22 scheme until November of 1944. (Real War Photos)





The TUSCALOOSA's starboard side quarterdeck 40MM gun crew test fire their weapons on 5 March 1943. The adjacent Mark 51 director worked with the 40MM guns. This ship earned seven Battle Stars for her actions in the Atlantic and Pacific – one of a few US cruisers to serve in both war zones. The TUSCALOOSA was armed with six quad mounted 40MM Bofors cannons and 28 twin mount 20MM Oerlikon cannons. (Real War Photos)

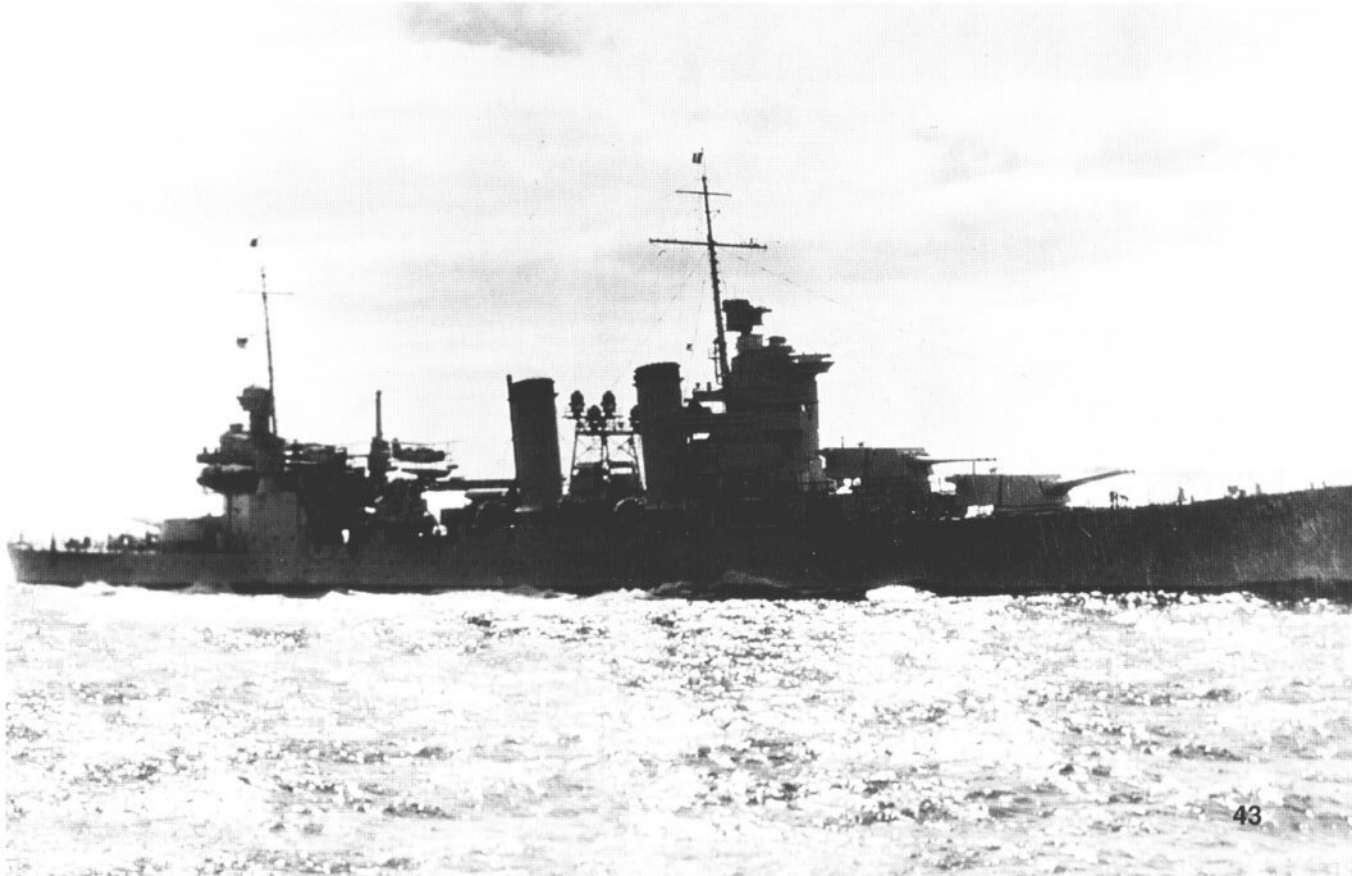
US Navy Ship Colors, World War II

(Approximate Federal Standard Equivalent Numbers in Parentheses)

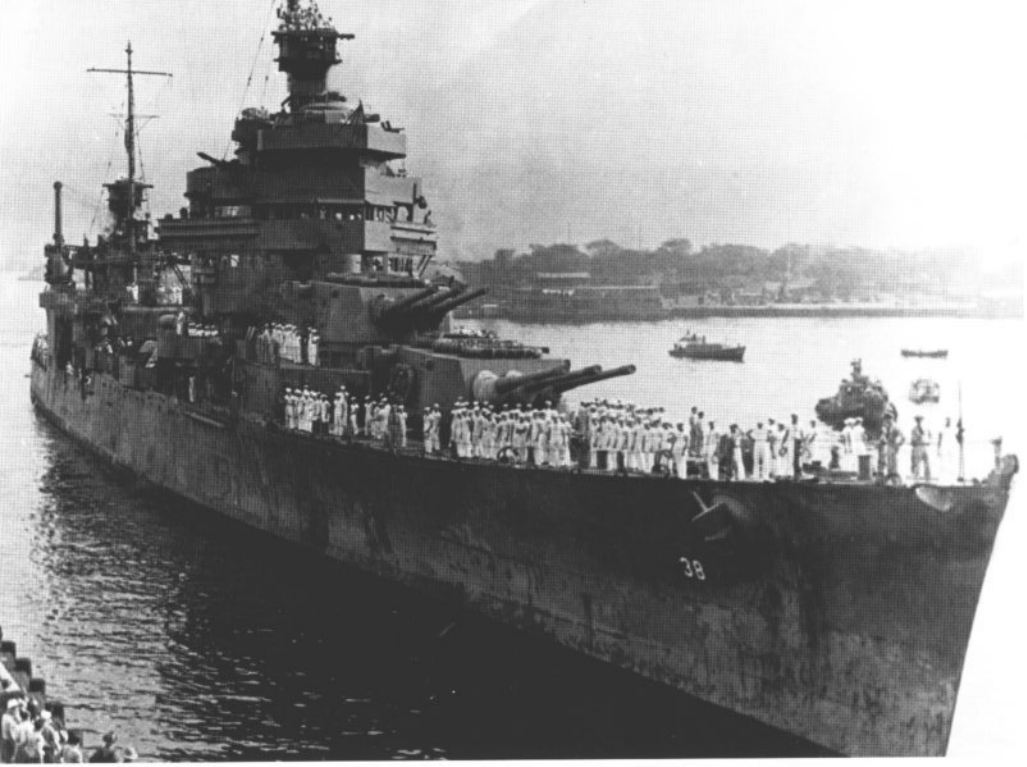
Measures (Ms.) Using These Colors Were Applied to US Heavy Cruisers During World War II

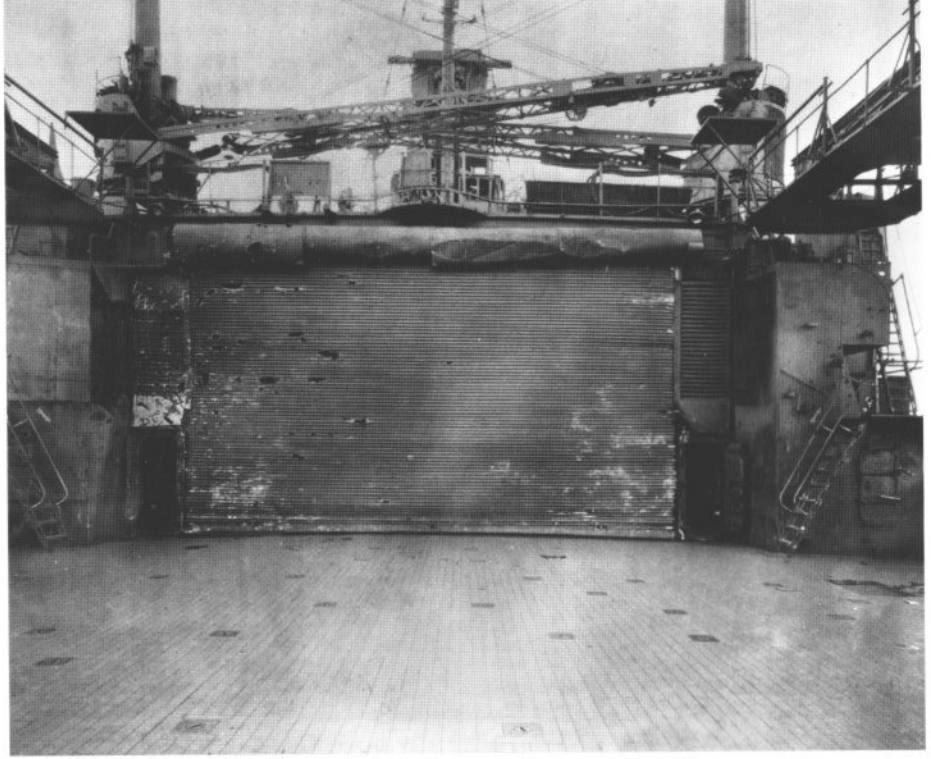
Light Gray, 5-L	(FS36320)	Ms. 1, 2, 3, 32, 33
Dark Gray, 5-D	(FS36163)	Ms. 1, 2, 5
Ocean Gray, 5-O	(FS35164)	Ms. 2, 12, 14, 17, 31, 32, 33
White, 5-U	(FS37855)	Ms. 5, 22
Sea Blue, 5-S	(FS35045)	Ms. 11, 12
Haze Gray, 5-H	(FS35237)	Ms. 12, 13, 14, 17, 22, 31
Navy Blue, 5-N	(FS35044)	Ms. 17, 21, 22, 31, 33
Deck Blue, 20-B	(FS35042)	For Decks and Other Horizontal Surfaces
Black, #82 (later BK)	(FS37040)	Ms. 4, 32

(Above) The TUSCALOOSA was camouflaged in Measure 32/13D before being sent to the Third Fleet in the Pacific in November of 1944. The foremast contained SK and SG radars – normal for this time frame – while the FC fire control radar was placed atop the pilothouse. During overhaul at Mare Island, the TUSCALOOSA's bridge area was altered to resemble the bridge of her sister ship, the SAN FRANCISCO. Curtiss SOC scout aircraft from VCS-4 are mounted on the catapults. (Floating Drydock)



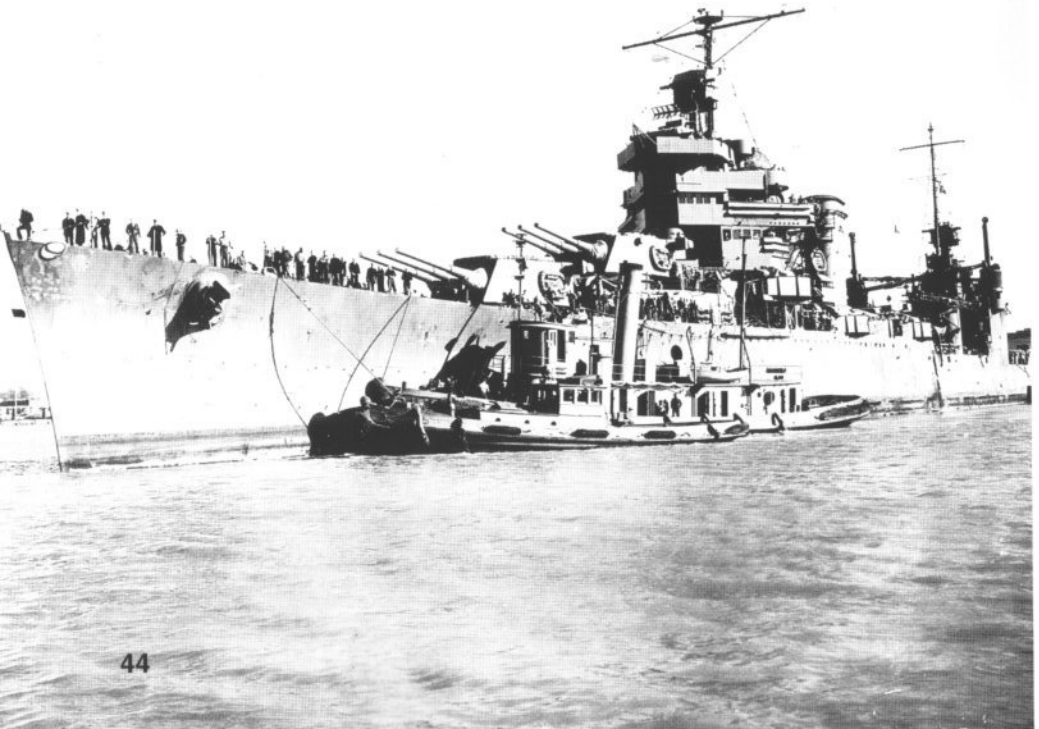
(Right) The SAN FRANCISCO (CA-38) is silhouetted against the Pacific sky in August of 1942. She was off Guadalcanal in the Solomon Islands to cover the US Marine landings that month. Her embarked SOC scouts from VCS(Cruiser Scout Squadron)-6 are on the ship's twin catapults awaiting orders to launch. The SAN FRANCISCO was the most decorated of all US cruisers with 17 Battle Stars and a Presidential Unit Citation awarded for her actions during the war.





(Above Left) The SAN FRANCISCO returns to Pearl Harbor, Hawaii on 4 December 1942, following the Third Battle of Savo Island near Guadalcanal the previous month. She received many large caliber rounds from Japanese ships during the battle, yet continued to fight. Japanese shells severely damaged her bridge, killing Captain Cassin Young – the cruiser's commander – and Rear Admiral Daniel Callaghan, commander of Task Group 67.4. To honor both officers, two FLETCHER class destroyers were christened: the CALLAGHAN (DD-792) and the CASSIN YOUNG (DD-793). The CALLAGHAN was lost off Okinawa to enemy action on 28 July 1945. (Real War Photos)

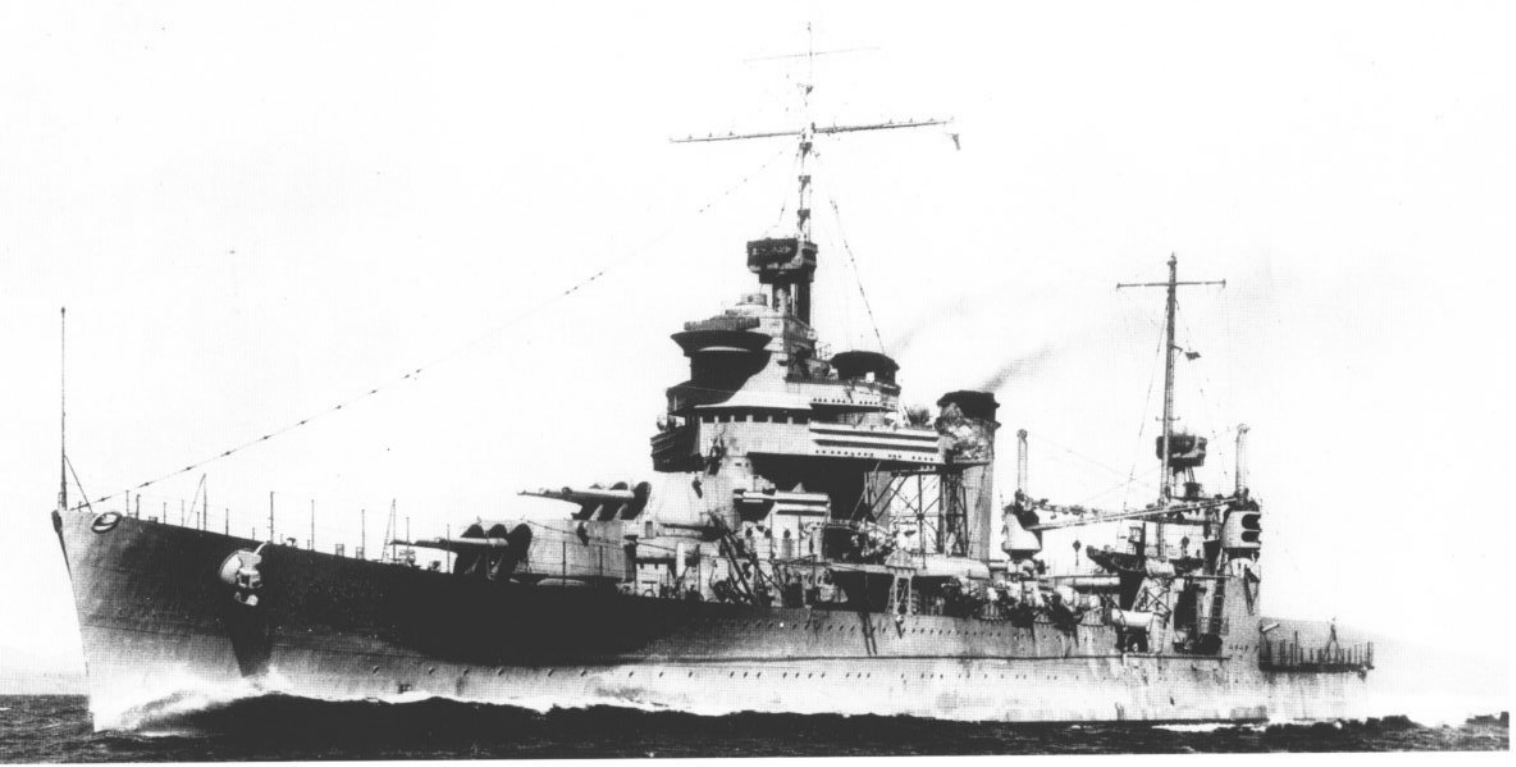
(Above) The SAN FRANCISCO's aircraft handling deck well shows the damage from large caliber Japanese shells during the Third Battle of Savo Island. The hangar door and engine room supply vents took numerous hits from both port and starboard during this engagement. The roll up hangar door – used to store the ship's scout aircraft – was shaped to conform to the deck. (Floating Drydock)



(Left) A yard tug maneuvers the SAN FRANCISCO into Mare Island Navy Yard in California on 14 December 1942, following the Battle of Savo Island. The various hits on the ship received attention from the shipyard workers. The SAN FRANCISCO was camouflaged in Measure 11, the Sea Blue System. (Floating Drydock)

The repaired SAN FRANCISCO sails out into the Pacific Ocean with a new Measure 21 (Navy Blue, FS35044) camouflage paint scheme in early 1943. During her repairs at Mare Island, she received a new bridge and upgraded radars. The foremast included SK air search and SG sea search radars, with an FC fire control radar atop the pilothouse. Bofors 40MM cannons were added to the quarterdeck in an attempt to upgrade her anti-aircraft protection. (Floating Drydock)

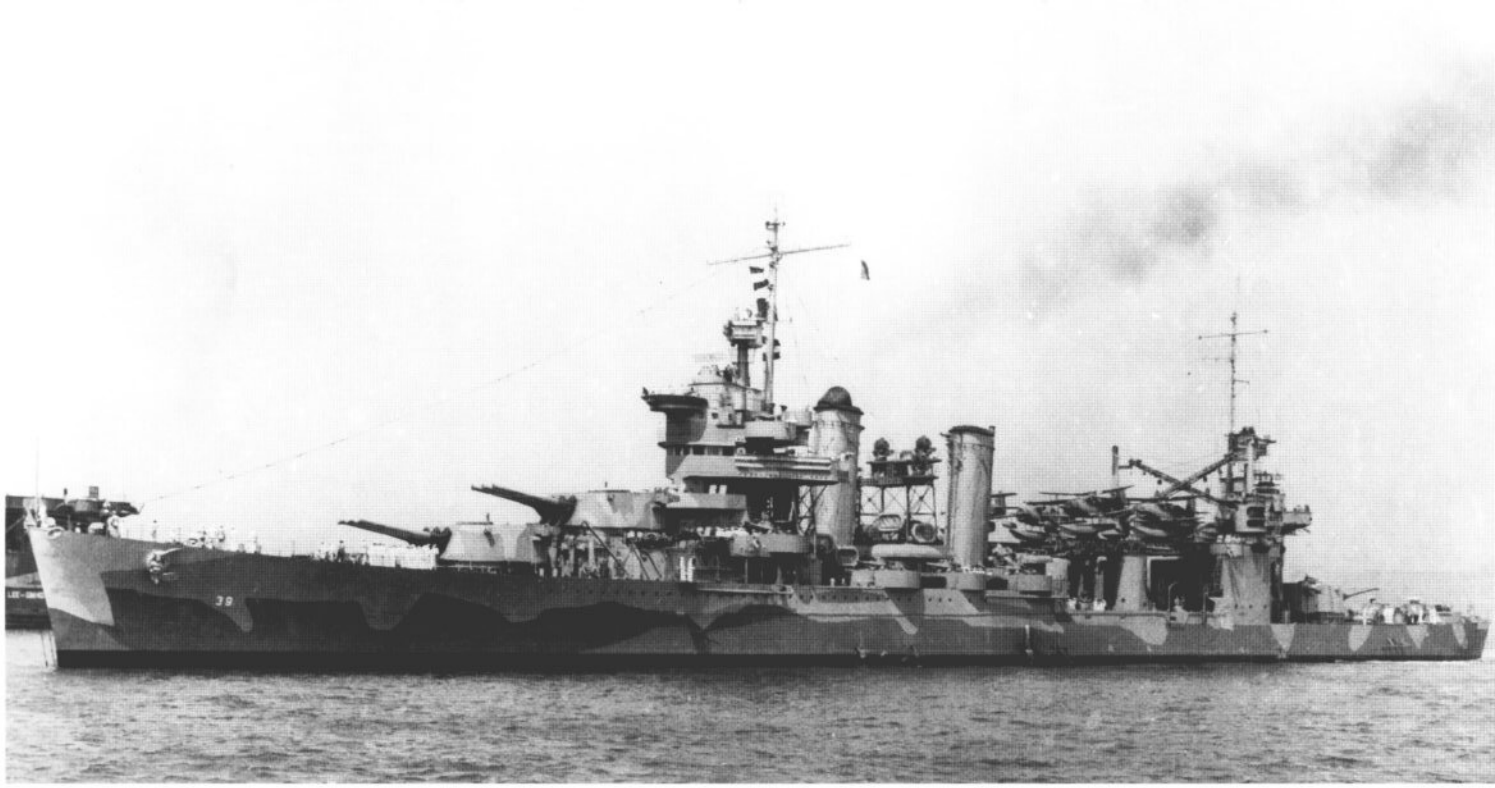
The SAN FRANCISCO transfers supplies and much needed fuel oil to the destroyer minelayer GWIN (DM-33), steaming to the cruiser's port side, on 26 October 1944. The SAN FRANCISCO was camouflaged in Measure 33/13D. The starboard side aircraft handling crane was removed at her last period in the yard to help reduce top weight. Additional radar equipment and anti-aircraft weapons increased the top weight of the 'Treaty' cruisers, which affected their stability at sea. (Real War Photos)



The QUINCY (CA-39) reaches 26 knots (48.2 KMH) while on her trials off Rockland, Maine on 1 April 1936 – approximately two months before her commissioning on 9 June 1936. She is camouflaged in Measure 1, the Dark Gray (FS36163) System. The line running along the hull side sent aviation fuel for her scout aircraft from the storage tank in the ship's bow to the hangar amidships. The QUINCY was built by Bethlehem Steel's Shipyard in Quincy, Massachusetts and was launched on 19 June 1935. (Real War Photos)

The QUINCY participates in a fleet problem (exercise) in the Atlantic on 1 May 1940. The Number One and Two turrets have stripes and the Number Three turret has a disc painted on it for recognition. The recognition colors are believed to be red on Turrets One and Two and light blue on Number Three. The QUINCY was painted in Measure 3, the Light Gray (FS36320) System. The teak deck surfaces were left unstained, while metal deck surfaces were light gray. (Real War Photos)

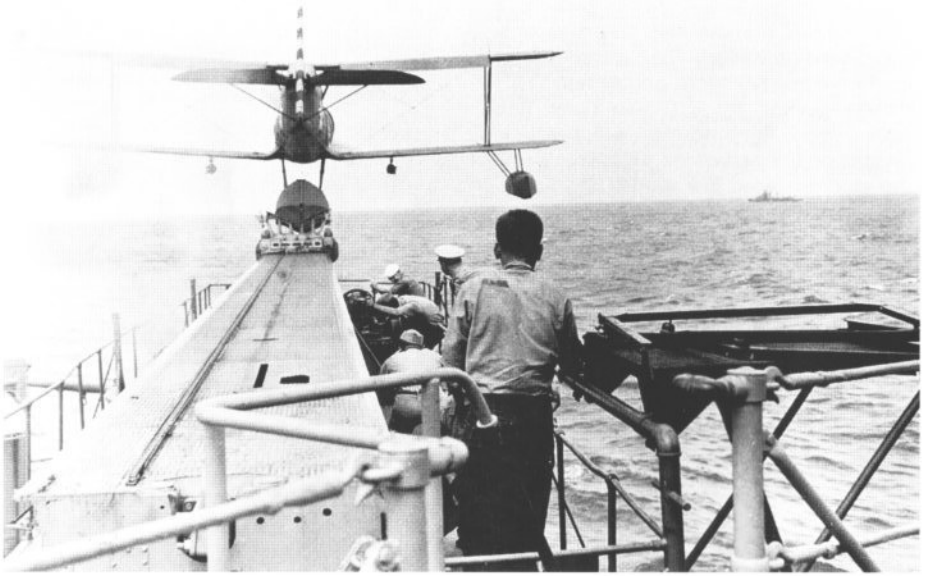
The QUINCY cruises near the New York Navy Yard on 23 May 1942, camouflaged in Measure 12 with splotches. This scheme – Sea Blue, Ocean Gray, and Haze Gray – incorporated great artistic license on the part of the paint crews and the yard manager. Her four SOC-1 scouting aircraft from VCS-7 are situated on the twin catapults. The QUINCY, along with her sister ships the ASTORIA and the VINCENNES, were lost during the Battle of Savo Island off Guadalcanal on 8-9 August 1942. This debacle marked one of the US Navy's worst disasters at sea. (Floating Drydock)



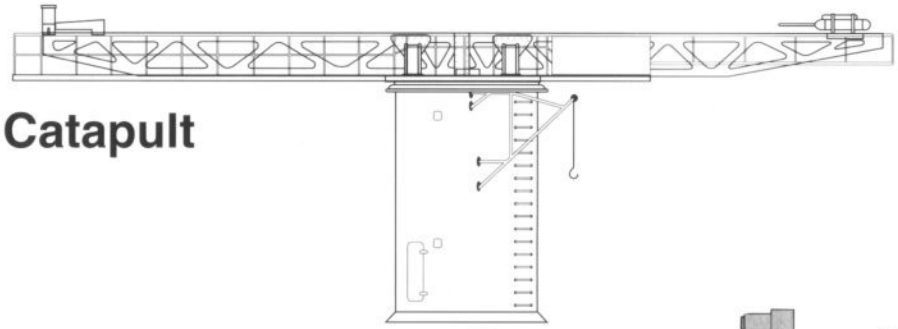
The VINCENNES (CA-44) is berthed at Pearl Harbor in May of 1942, camouflaged in Measure 12 with splotches. One of her SOC-3 Seagull scouts from VCS-7 taxis on the water in the foreground. She was the last of the second generation US heavy cruisers built following the 10,000 ton displacement limit required by the 1921 and 1930 naval treaties. The VINCENNES was launched from Bethlehem Shipyard in Quincy on 21 May 1936 and commissioned on 24 February 1937. She was sunk during the Battle of Savo Island on 8/9 August 1942. (Real War Photos)

The Vought O3U-3 Corsair became the standard shipboard scout aircraft for the Cruiser Scouting Squadrons (VCSs) in 1935. Of typical layout and design, the O3U-3 served for two years until replaced by the Curtiss SOC Seagull. This example (BuNo 9142) was the first O3U-3 produced and the balance of this variant's production went to the 'treaty' heavy cruisers. (LTV)

The gunner/radio operator in an SOC-3 from Scouting Squadron Seven (VCS-7) throws a message to the deck of the AUGUSTA (CA-31) in November of 1942. The US national insignia has the yellow surround applied to all Allied aircraft for the invasion of French North Africa (Operation TORCH). The side number 18 indicated this was the 18th aircraft assigned to VCS-7. The SOC was camouflaged in non-specular Blue Gray (FS35189) over Light Gray (FS36440). (Real War Photos)

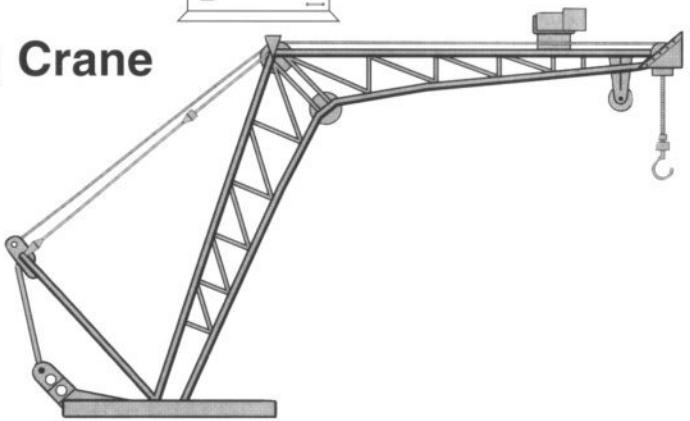


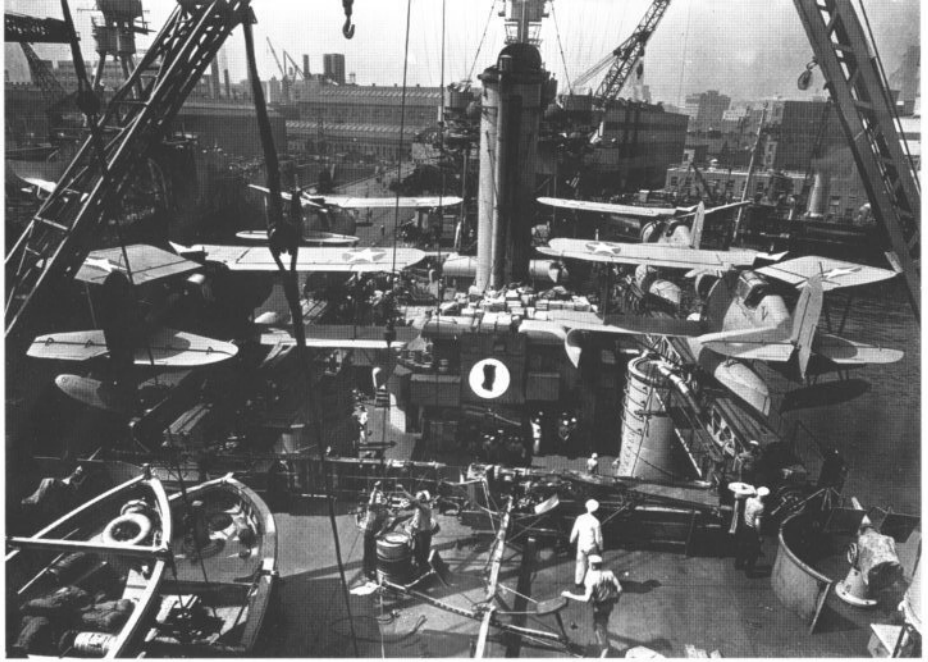
A Curtiss SOC-1 Seagull from VCS-7 is launched from the TUSCALOOSA (CA-37) during an Atlantic Patrol in early 1942. The SOC has the authorized red and white stripes on the rudder. Two 60 pound (27.2 KG) bombs are slung under the wings, one per rack. The Curtiss SOC and the Naval Aircraft Factory-built SON served aboard US heavy cruisers from 1936 until 1945. They were to be replaced by the Curtiss SO3C Seamew in 1943, but the Seamew proved inadequate for shipboard service. (Real War Photos)



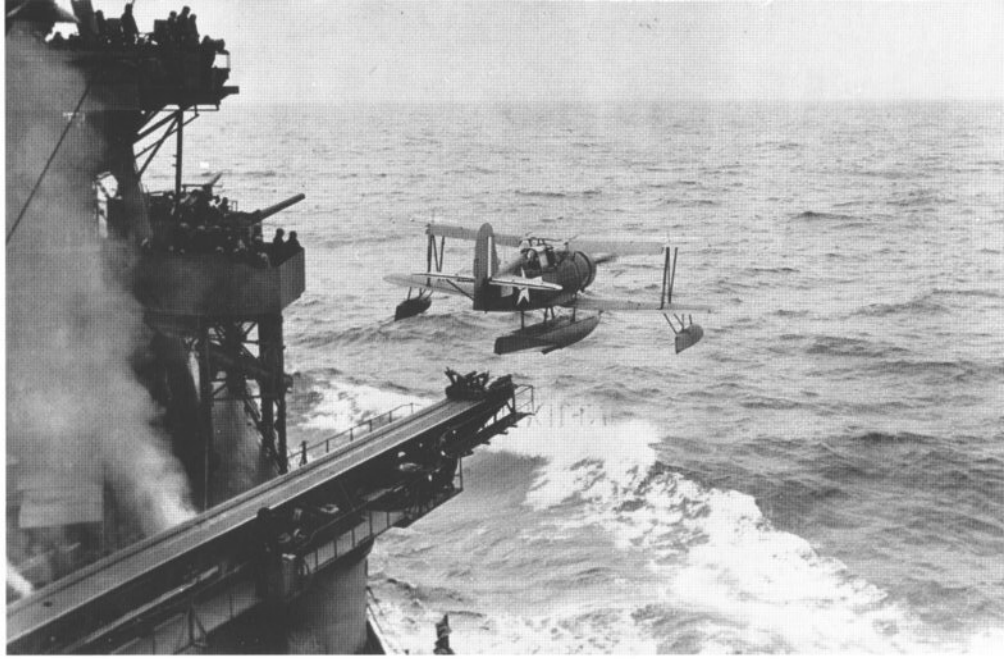
Catapult

Handling Crane



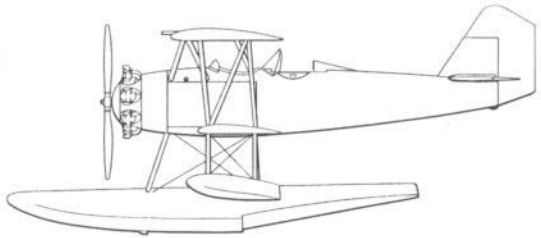


Two deck side catapults flank the aircraft handling well deck on the QUINCY (CA-39), berthed at the New York Navy Yard on 29 May 1942. Four SOC-1 scouts detached from VCS-7 are spotted aboard the catapults. The Seagulls' outboard wing panels were folded back against the side of the fuselages to provide additional clearances in the yard. The sailors on the aircraft hangar deck are assembling supports for the ship's boats. (Floating Drydock)

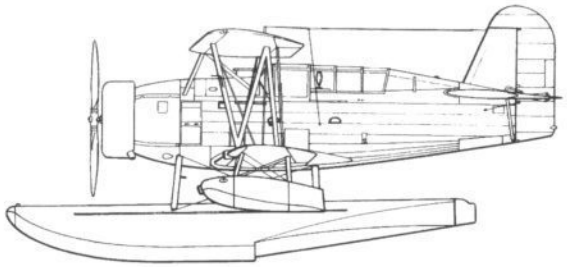


A Curtiss SOC-3 from VCS-5 launches off the port 60 foot (18.3 M) catapult of the SALT LAKE CITY (CA-25) on 2 August 1943. The Seagull will soon be spotting for the cruiser's 8-inch (20.3 CM) guns, which will be directed toward Kiska Island, Alaska. The white vertical stripe on the tail and oversize national insignias were standard recognition markings for scout aircraft operating in Alaskan waters. (Real War Photos)

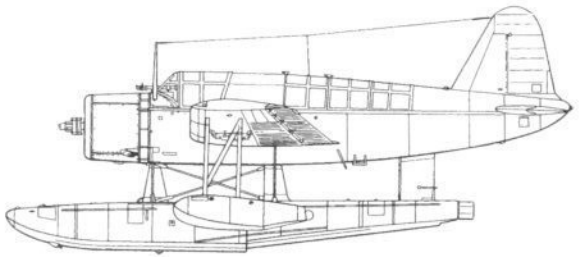
Vought O3U Corsair



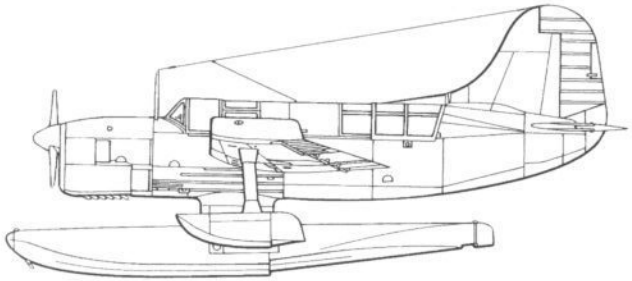
Curtiss SOC Seagull



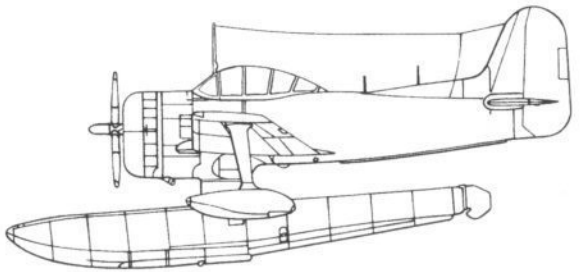
Vought OS2U Kingfisher



Curtiss SO3C Seamew



Curtiss SC-1 Seahawk



The USS CHESTER (CA-27) was camouflaged in Measure 32/9D – the Medium Pattern System designed for destroyers – while operating in the north Pacific in mid-1944. The NORTHAMPTON class cruiser bombarded the Kurile Islands north of the Japanese mainland in June of that year.

The USS INDIANAPOLIS (CA-35) – painted in the Measure 22 Graded System – cruises near Leyte in the Philippines in late July of 1945. The PORTLAND class cruiser was steaming from Tinian, where she delivered components for the atomic bombs destined for Hiroshima and Nagasaki, Japan. On 30 July 1945, the INDIANAPOLIS was torpedoed and sunk by the Japanese submarine I-58, killing 883 of her crew.

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